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THE NEW INTERNATIONAL YEAR BOOK

A COMPENDIUM OF THE WORLD'S PROGRESS

FOR THE YEAR

1914

EDITOR

FRANK MOORE COLBY, M.A.

ASSOCIATE EDITORS

ALLEN LEON CHURCHILL

WILLIAM WALLACE IRWIN

HORATIO S. KRANS, Ph.D.

NEW YORK
DODD, MEAD AND COMPANY
1915

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PREFACE

In the NEW INTERNATIONAL YEAR BOOK for 1914, the eighth in the new series, which began with the 1907 volume, almost every class of articles shows the effects of the great war. One of the most obvious effects is the stoppage of certain sources of statistical information dealing with trade and industry, and many of the articles on those subjects are less detailed in this respect than formerly. The space thus saved has been given to a description of the abnormal conditions caused by the war, and to a fuller treatment than usual of the history of foreign nations. A lucid and compact narrative of the war itself down to the close of the year will be found in the artiticle on WAR OF THE NATIONS, written by Professor Carlton Hayes. Supplementing this are such articles as MILITARY PROGRESS, NAVAL PROGRESS, BATTLESHIPS, SUBMARINES, AERONAUTICS, and the historical paragraphs on the separate countries. The large size of the YEAR BOOK and its policy of excluding matters that do not pertain to the calendar year, or are not derived from the latest available information, make it possible to include a more comprehensive discussion of this subject than will be found in other annual volumes of its kind.

As has been said in previous prefaces this YEAR BOOK is designed as an encyclopædia of the year, and includes a number of departments that are not found or are not so fully represented in other annuals, for example, BIOGRAPHY, AGRICULTURE, POLITICAL HISTORY of the United States and foreign countries, SOCIETIES, and RELIGIOUS BODIES. Among the important articles that may be mentioned in the present volume are: AGRICULTURE by Dr. E. W. Allen and Dr. A. C. True; ANTHROPOLOGY AND ETHNOLOGY by Dr. R. H. Lowie and Dr. Clark Wissler; ARCHÆOLOGY by Professor O. S. Tonks; DRAMA by Mr. Clayton Hamilton; INTERNATIONAL ARBITRATION AND PEACE by Mr. Clinton Rogers Woodruff; ENGLISH, AMERICAN, FRENCH, GERMAN, ITALIAN, SCANDINAVIAN, and SPANISH LITERATURES; PHILOLOGY by Professors Charles Knapp and J. L. Gerig; PSYCHOLOGY by Professor Madison Bentley and Dr. C. A. Ruckmich; PHYSICS by Dr. W. W. Stifler; CHEMISTRY by Dr. E. T. Wherry. In addition to articles, which like these cover a very wide field, more specific treatment is given to such topics as RAILWAYS by Mr. William E. Hooper, which discusses important matters of current interest; ELECTORAL REFORM; FEMINISM; WOMAN SUFFRAGE; JEWS; EUGENICS; EXPOSITIONS, with a special reference to the Panama-Pacific International Exposition; and EXPLORATION and POLAR RESEARCH by General A. W. Greely.

PREFACE

As to the UNITED STATES, some of the chief features are the discussion of the Canal Tolls, Ship Purchase, Trade Commission bills, and the record of the Sixty-third Congress; the results of the elections of November, 1914; the relations of the United States government as affected by the War of the Nations; and the conditions described in the articles SHIPBUILDING, FIRE PROTECTION, BANKS AND BANKING (including an account of the Federal Reserve Act).

FRANK MOORE COLBY.

EDITOR

FRANK MOORE COLBY, M. A.

ASSOCIATE EDITORS

ALLEN LEON CHURCHILL
WILLIAM WALLACE IRWIN
HORATIO S. KRANS, PH. D.

LIST OF CONTRIBUTORS

AGRICULTURE, HORTICULTURE, FOOD, IRRIGATION, BOTANY, FORESTRY, ETC.
EDWIN WEST ALLEN, PH. D.,
UNITED STATES DEPARTMENT OF AGRICULTURE; ASSISTED BY EXPERTS IN THE DEPARTMENT OF AGRICULTURE AT WASHINGTON,
AND
ALFRED CHARLES TRUE, PH. D.,
UNITED STATES DEPARTMENT OF AGRICULTURE.

ANTHROPOLOGY AND ETHNOLOGY
ROBERT H. LOWIE, PH. D.,
AMERICAN MUSEUM OF NATURAL HISTORY, AND
CLARK WISSLER, PH. D.,
AMERICAN MUSEUM OF NATURAL HISTORY.

ARCHÆOLOGY
OLIVER SAMUEL TONKS, PH. D.,
PROFESSOR OF ART, VASSAR COLLEGE.

ARCHITECTURE
RICHARD F. BACH,
CURATOR, SCHOOL OF ARCHITECTURE, COLUMBIA UNIVERSITY.

ASTRONOMY AND METEOROLOGY
T. W. EDMONDSON, PH. D.,
PROFESSOR OF MATHEMATICS, NEW YORK UNIVERSITY.

CELEBRATIONS, CHEMISTRY, INDUSTRIAL, AND EXPOSITIONS
MARCUS BENJAMIN, PH. D., Sc. D., LL. D.,
EDITOR FOR THE UNITED STATES NATIONAL MUSEUM.

CHEMISTRY
EDGAR T. WHERRY, PH. D.,
ASSISTANT CURATOR, DIVISION OF MINERALOGY, UNITED STATES NATIONAL MUSEUM.

DRAMA
CLAYTON HAMILTON,
DRAMATIC CRITIC OF THE "BOOKMAN."

ECONOMIC AND POLITICAL SCIENCE
FRANK HAMILTON HANKINS, PH. D.,
ASSISTANT PROFESSOR OF ECONOMICS AND SOCIOLOGY, CLARK COLLEGE.

EDUCATION
MILO B. HILLEGAS, PH. B.,
ASSISTANT PROFESSOR OF ELEMENTARY EDUCATION, TEACHERS COLLEGE, COLUMBIA UNIVERSITY.

ELECTORAL REFORM
W. W. PIERSON, JR.,
INSTRUCTOR IN HISTORY, COLUMBIA UNIVERSITY.

ELECTRICAL ENGINEERING AND PHOTOGRAPHY
REGINALD GORDON.

EUGENICS
ALVAN A. TENNEY, PH. D.,
ASSISTANT PROFESSOR OF SOCIOLOGY, COLUMBIA UNIVERSITY.

EXPLORATION AND POLAR RESEARCH
A. W. GREELY, PH. D.,
MAJOR-GENERAL, UNITED STATES ARMY.

FEMINISM
JULIET STUART POYNTZ, A. M.,
AMERICAN ASSOCIATION FOR LABOR LEGISLATION.

FOREIGN GAZETTEER
EDWARD LATHROP ENGLE AND
ALLAN EVA ENGLE.

FOREIGN HISTORY AND POLITICS
CARLTON H. HAYES, PH. D.,
ASSISTANT PROFESSOR OF HISTORY, COLUMBIA UNIVERSITY.

GEOLOGY
DAVID HALE NEWLAND, A. B.,
ASSISTANT STATE GEOLOGIST, NEW YORK.

INTERNATIONAL ARBITRATION AND PEACE
CLINTON ROGERS WOODRUFF, LL. B.,
SECRETARY OF THE NATIONAL MUNICIPAL LEAGUE AND OF THE MOHONK CONFERENCE, AND PRESIDENT OF THE BOARD OF PERSONAL REGISTRATION, PHILADELPHIA.

JEWS AND JUDAISM
DAVID A. MODELL, A. M.

LIBRARY PROGRESS
WILLIAM W. BISHOP, A. M.,
SUPERINTENDENT OF THE READING ROOM, LIBRARY OF CONGRESS, WASHINGTON, D. C.

LITERATURE, ENGLISH AND AMERICAN
EDWIN E. SLOSSON, PH. D.,
LITERARY EDITOR, "THE INDEPENDENT."

LITERATURE, FRENCH
ALBERT SCHINZ, PH. D.,
PROFESSOR OF FRENCH LITERATURE, SMITH COLLEGE.

LITERATURE, GERMAN
AMELIA VON ENDE,
CONTRIBUTOR TO NEW YORK "EVENING POST" AND "THE NATION."

LITERATURE, ITALIAN
ALBERT ARTHUR LIVINGSTON, PH. D.,
ASSISTANT PROFESSOR OF THE ROMANCE LANGUAGES AND LITERATURE, COLUMBIA UNIVERSITY.

LITERATURE, SCANDINAVIAN
HARRY V. E. PALMBLAD, A. M.,
INSTRUCTOR IN GERMANIC LANGUAGES AND LITERATURES, UNIVERSITY OF KANSAS.

LITERATURE, SPANISH
JOHN DRISCOLL FITZ-GERALD, PH. D.,
MEMBER OF THE HISPANIC SOCIETY OF AMERICA, CORRESPONDING MEMBER OF THE SPANISH ROYAL ACADEMY, ASSISTANT PROFESSOR OF ROMANCE LANGUAGES, UNIVERSITY OF ILLINOIS.

MANUFACTURES, CIVIL ENGINEERING, TECHNOLOGY, AERONAUTICS, AND FIRE PROTECTION
HERBERT TREADWELL WADE.

MEDICINE
ALBERT WARREN FERRIS, A. M., M. D.,
MEDICAL EXPERT TO STATE RESERVATION COMMISSIONERS AT SARATOGA SPRINGS; CONSULTING PHYSICIAN, ITALIAN HOSPITAL, NEW YORK; AND OF BINGHAMTON STATE HOSPITAL; FORMER SENIOR RESIDENT PHYSICIAN, GLEN SPRINGS, WATKINS, N. Y.; FORMER PRESIDENT, N. Y. STATE COMMISSION IN LUNACY; FORMER ASSISTANT IN NEUROLOGY, COLUMBIA UNIVERSITY; FORMER ASSISTANT IN MEDICINE, NEW YORK UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE; ASSISTED BY
DAVID GILBERT YATES, M. D.,
SURGEON, NEW YORK CHILDREN'S HOSPITAL; SURGEON, DEMILT DISPENSARY, NEW YORK CITY.

MILITARY PROGRESS
C. DeW. WILLCOX,
LIEUTENANT-COLONEL, U. S A., PROFESSOR OF MODERN LANGUAGES, U. S. MILITARY ACADEMY.

MILITARY STATISTICS, FOREIGN
HERBERT TREADWELL WADE.

MUSIC
ALFRED REMY, M. A.,
EXTENSION LECTURER, COLUMBIA UNIVERSITY; FORMER PROFESSOR OF HARMONY AND COUNTERPOINT, INTERNATIONAL CONSERVATORY, NEW YORK; LECTURER ON THE HISTORY OF MUSIC, NEW YORK COLLEGE OF MUSIC.

NAVAL PROGRESS AND BATTLESHIPS
LEWIS SAYRE VAN DUZER,
CAPTAIN IN THE UNITED STATES NAVY, RETIRED; EX-SECRETARY OF THE UNITED STATES NAVAL INSTITUTE.

PAINTING AND SCULPTURE
FORBES WATSON,
CONTRIBUTOR TO THE NEW YORK "EVENING POST" AND "THE NATION."

PHILOLOGY
CHARLES KNAPP, PH. D.,
PROFESSOR OF CLASSICAL PHILOLOGY, BARNARD COLLEGE, COLUMBIA UNIVERSITY; AND
JOHN LAWRENCE GERIG, A. M., PH. D.,
ASSOCIATE PROFESSOR OF CELTIC, COLUMBIA UNIVERSITY.

PHILOSOPHY
FRANK THILLY, A. M., PH. D., LL. D.,
PROFESSOR OF PHILOSOPHY, SAGE SCHOOL OF PHILOSOPHY, CORNELL UNIVERSITY.

PHYSICS
WILLIAM W. STIFLER, PH. D.,
INSTRUCTOR IN PHYSICS, COLUMBIA UNIVERSITY.

PSYCHOLOGY, PSYCHICAL RESEARCH, AND PSYCHOTHERAPY
MADISON BENTLEY, B. S., PH. D.,
HEAD OF THE DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF ILLINOIS; AND
CHRISTIAN A. RUCKMICH, PH. D.,
INSTRUCTOR IN PSYCHOLOGY, UNIVERSITY OF ILLINOIS.

RAILWAYS
WILLIAM E. HOOPER,
ASSOCIATE EDITOR, "RAILWAY AGE GAZETTE."

SANITARY ENGINEERING AND MUNICIPAL ACTIVITIES
MOSES NELSON BAKER, PH. B., C. E.,
EDITOR OF THE "ENGINEERING NEWS."

SPORTS
CHARLES A. TAYLOR,
MEMBER OF THE STAFF OF THE NEW YORK "TRIBUNE."

UNIVERSITIES AND COLLEGES
MILO B. HILLEGAS, PH. D.,
ASSISTANT PROFESSOR OF ELEMENTARY EDUCATION, TEACHERS COLLEGE, COLUMBIA UNIVERSITY.

WAR OF THE NATIONS
CARLTON H. HAYES, PH. D.,
ASSISTANT PROFESSOR OF HISTORY, COLUMBIA UNIVERSITY.

ZOOLOGY AND BIOLOGY
AARON L. TREADWELL, PH. D.,
PROFESSOR OF BIOLOGY, VASSAR COLLEGE.

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Note: In certain tables in this work it will be found, by addition, that the totals do not correspond to the sum of the items. This is the result of the omission or inclusion of certain small items which are not mentioned in the table, but are included in the totals. This is a usage frequently employed in the compilation of government statistics, from which sources the greater number of the tables in the Year Book are taken.

THE NEW INTERNATIONAL YEAR BOOK

A. B. C. MEDIATION, See INTERNATIONAL ARBITRATION AND PEACE, and MEXICO, *A. B. C. Mediation*.

ABSINTHE. See ALCOHOL.

ABSOLUTE ZERO. See PHYSICS.

ABYSSINIA. (Anciently ETHIOPIA.) An absolute monarchy in eastern Africa under a Christian sovereign, composed of several so-called kingdoms (Tigré, Gojam, Shoa, Amhara) together with territories and dependencies under subject chiefs. The area is estimated at approximately 432,000 square miles. The population, composed mainly of Semitic Abyssinians, Gallas, and Somalis, negroes, Falashas, and non-natives, numbers between 9 and 11 millions. The national religion is Coptic Christian (monophysitism); but there are great numbers of Mohammedans and pagans. Addis Abeba, the capital, has a permanent population estimated at over 60,000 and a floating population of about 30,000; Harrar has about 40,000 and Diré Dawa has about 5000.

Grazing is practiced, and a primitive sort of agriculture is carried on. The forests yield rubber and valuable timbers. Gold-mining tracts extend along the banks of the Baro River, and coal has been found. The imports (chiefly from Great Britain, France, India, Italy, and the United States) are gray shirting, cotton goods, arms and ammunition, food-stuffs, beverages, railway material, and petroleum. The exports are hides and skins, coffee, wax, ivory, civet, etc. The total trade by way of Jibuti in 1911 was valued at 8,722,531 francs imports, and 11,765,844 francs exports; by way of Eritrea, 2,320,558 lire imports, and 3,072,100 lire exports; by way of Gambela in the Sudan, £E 27,962 imports, and £E 37,754 exports. The principal articles of export via Jibuti were skins, 4865 francs; coffee, 4567; ivory, 1137; wax, 986,000. A British source gives the total trade through Jibuti in 1912, imports and exports, at £588,924; imports through the Sudan £34,280 and exports, £38,720. The total trade between Abyssinia and Great Britain in 1912 is given at £3661 imports and £4926 exports.

A railway extends from Jibuti to Diré Dawa, a distance of 309 kilometers, of which 219 kilometers are in Abyssinian territory. An extension from Diré Dawa to Mehesso, 152 kilometers, was opened in 1913; the extension from Mehesso to Addis Abeba, 328 kilometers, is under construction. Telegraph lines connect the capital with Harrar, with Jibuti, and with Massaua in Eritrea. There is an extensive telephone system. Beyond the capital roads are almost unknown. Transport is by pack animals. The financial business of the government is transacted by the Bank of Abyssinia. The current coin of the country is the Maria Theresa dollar, but the new Menelek dollar (the talari, worth about 50 cents) is the official standard. The government is essentially of a feudal character. Each large province is governed by a *ras*, a prince or feudal chief. At the head of the state is the Emperor. Lij Yasu, born 1897, succeeded Menelek II in December, 1913. He is the son of Menelek's second daughter Waizaro Shoa Rogga and Ras Mikael, the chief of the Wollo Gallas.

ARMY. There is a regular army formed of contingents from the various departments and aggregating about 150,000 men stationed in various garrisons. In addition there are irregulars and a territorial army. Seven batteries of artillery and machine guns taken at the battle of Adua are located at Addis Abeba. Every man in the regular army is supposed to be mounted, though this condition is not realized, and in addition to the chiefs and their retainers summoned for war, there is a permanent force of mercenaries maintained by the King armed with rifles and known as Wottader.

ACADEMY, FRENCH (ACADÉMIE FRANÇAISE). The first to be founded (1635) and the most noted of the five academies constituting the Institute of France, the other four being: the Academy of Inscriptions and Belles-lettres, the Academy of Sciences, the Academy of Fine Arts, and the Academy of Moral and Political Science. The members of the French Academy, elected for life, and known as the "Forty Immortals," take rank as the leading French men of letters of their time; and collectively they are the last resort in all disputed literary matters. 1500 francs is given as a yearly honorarium to each member, and more than 12,000 francs distributed annually in prizes. During 1914 five members died: Jules Claretie; Jules Lemaître; Albert, Count de Mun; Charles Jean Melchior, Marquis de Vogüé; and Henri Roujon; three new members were elected: Alfred Capus, to succeed Henri Poincaré; Pierre de la Gorce, to succeed Thureau-Daugin; and Henri Bergson, to succeed Emile Ollivier. At the end of 1914 there were five vacancies.

ACADEMY OF ARTS AND LETTERS, AMERICAN. A body of distinguished men, to some extent patterned after the French Academy. Its membership, limited to 50, is drawn by ballot from that of the National Institute of Arts and Letters; its president, since 1909, has been William Dean Howells. The Academy, since its founding in 1904, and the Institute hold annual joint meetings, the last of which, in October, 1914, took place in New York. On that occasion an address was delivered by Eugène Brieux, French dramatist, who brought the greetings of the French Academy and of President Poincaré. It was announced that provision had been made for a permanent home for the Academy and Institute, in New York. Various prizes were awarded, the chief one (the Academy's gold medal) to John Singer Sargent, the painter. No new members were elected to the Academy in 1914, although there were two vacancies. The membership then included: William Dean Howells, Henry James, Henry Adams, Thomas Raynesford Lounsbury, Theodore Roosevelt, John Singer Sargent, Alfred Thayer Mahan, Daniel Chester French, John Burroughs, James Ford Rhodes, Horatio William Parker, William Milligan Sloane, Robert Underwood Johnson, George Washington Cable, Andrew Dickson White, Henry Van Dyke, William Crary Brownell, Basil Lanneau Gildersleeve, Woodrow Wilson, Arthur Twining Hadley, Henry Cabot Lodge, Francis Hopkinson Smith, Edwin Howland Blashfield, William Merritt Chase, Thomas Hastings, Hamilton Wright Mabie, Brander Matthews, Thomas Nelson Page, Elihu Vedder, George Edward Woodberry, Kenyon Cox, George Whitefield Chadwick, Abbott Handerson Thayer, John Muir, Charles Francis Adams, Henry Mills Alden, George de Forest Brush, William Rutherford Mead, John W. Alexander, Bliss Perry, Abbott Lawrence Lowell, James Whitcomb Riley, Nicholas Murray Butler, Paul Wayland Bartlett, Owen Wister, Herbert Adams, Augustus Thomas, Timothy Cole.

ACCIDENTS. See Railway Accidents; Safety at Sea; Workman's Compensation.

ADAMS, John Lanson. An American physician and surgeon, died Sept. 26, 1914. He was born at Westport, Conn., in 1860, and was educated at Yale University, graduated at the College of Physicians and Surgeons, New York City, in 1886, and studied at medical colleges abroad for two years. From 1892 he practiced his profession in New York City. He was successively president of the New York School of Clinical Medicine; attending surgeon, New York Eye and Ear Infirmary; consulting ophthalmologist and otologist, to Society of the Lying-in Hospital and Manhattan State Hospital. He was also a member of several otological and ophthalmological associations.

ADEN. A British dependency, in southwestern Arabia; a part of the Bombay Presidency. The peninsula has an area of 75 square miles, besides a strip of mainland about three miles wide, and the island of Perim (5 square miles). Total pop. (1911), 46,165. The protectorate covers some 9000 square miles, with an estimated population of 100,000. The strongly fortified town of Aden is an important coaling and trading station. The trade is almost entirely a transhipment one, the leading imports being cotton goods, grain, hides and skins, and tobacco. The exports include the articles mentioned as imports, besides coffee, gums, civet, ivory, and wax. In 1907–08 the sea-borne imports were valued at Rs. 44,699,050; sea-borne exports, Rs. 40,471,126 (one rupee = 32.44 cents); imports and exports by land, Rs. 2,475,007 and Rs. 1,652,492, respectively. The total trade in 1911–12 was £8,252,814, of which £6,251,717 was foreign trade, £1,607,096 private Indian trade, and £394,001 land trade. The imports of merchandise in the private foreign trade amounted to £2,343,745; exports, £2,689,509. Imports in private Indian trade amounted to £952,915; exports, £248,818. Imports, land trade, £227,709; exports, £153,133. The settlement is subject to the government of Bombay, the resident being also commander of the troops in garrison. Maj. H. F. Jacob was political agent in 1914.

ADMINISTRATION. See United States.

ADULTERATION. See Food and Nutrition, *passim*.

ADVANCEMENT OF SCIENCE, American Association for the. The 65th annual meeting of the association was held in Philadelphia Dec. 28, 1914, to Jan. 2, 1915. There were 1086 members in attendance. At the same time several societies affiliated with the association held their meetings. These included the American Physical Society, the Geological Society of America, Paleontological Society of America, American Alpine Club, American Society of Zoologists, American Society of Naturalists, American Association of Entomologists, Entomological Society of America, Botanical Society of America, American Phytological Society, Society for Horticultural Science, Sullivant Moss Society, American Microscopical Society, American Anthropological Association, American Folk-Lore Society, American Psychological Association, Society of American Bacteriologists, American Nature Study Society, and other scientific societies. The meeting was called to order by the retiring president, Dr. Edmund B. Wilson, who introduced the president of the meeting, Dr. Charles W. Eliot. After the address of welcome, to which Dr. Eliot replied, Dr. Wilson delivered the annual address on "Some Aspects of Progress of Modern Zoölogy." The council elected 256 members and 620 fellows. Two public lectures in honor of the citizens of Philadelphia were delivered: one by Dr. Dayton C. Miller on "The Science of Musical Sounds"; the other by Dr. William H. Nichols on "The War and the Chemical Industry." The following officers were elected: President, W. W. Campbell; Vice-presidents (section A) A. O. Leuschner, (B) Frederick Slate, (C) W. McPherson, (D) Bion J. Arnold, (E) C. S. Prosser, (F) V. L. Kellogg, (G) W. A. Setchell, (H) G. M. Stratton, (I) George F. Kunz, (K) F. P. Gay, (L) E. P. Cubberly, (M) Eugene Davenport; General Secretary, Henry Skinner; Secretary of Council, W. E. Henderson. Dr. L. O. Howard was again reëlected Permanent Secretary for five years. There will be a summer meeting at San Francisco, Aug. 2–7, 1915. The 1915–16 winter meeting will be held at Columbus, Ohio. A convocation week meeting is recommended for New York City in 1916–17, and a meeting in 1917–18 is to be held either in Pittsburgh or Toronto.

ADVANCEMENT OF SCIENCE, British Association for the. The annual meeting of the association, which was founded 83 years ago, was held in Australia in August, 1914, the meetings taking place in Perth, Adelaide, Melbourne, Sydney, and Brisbane, though the principal sessions were held in Melbourne and Sydney. About 350 members came from Britain to attend the meeting. Before the various sessions began Britain had declared war on Germany, and this raised the question as to the attitude of the association toward the German visitors. It was finally decided, though not without expressions of dissent, to ignore the war so far as concerned the presence of the German scientists, upon some of whom degrees were conferred at Adelaide and Melbourne. The only changes in the official programme were the abandonment of the trip to New Zealand, and the early return to Britain of many of the members. After a meeting of part of the members at Perth, West Australia, a full meeting of the association was held at Adelaide, South Australia, where notable addresses were given by Sir Oliver Lodge, Prof. W. J. Sollas, Sir C. P. Lucas, and A. D. Hall. Later at Brisbane addresses were delivered by Prof. H. E. Armstrong on "The Materials of Life," by Sir Edward Schäfer on "Australia and Science," and by Prof. J. W. Gregory. At Melbourne the first, and later at Sydney the second, part of the presidential address was delivered by Prof. William Bateson, the subject being the factors of heredity. The regular work of the various sections was varied by joint discussions, especially between the botanical and zoölogical sections. Noteworthy incidents during the voyage to Australia were successful observations on "Gravity over the Oceans," "Ocean Plankton," and "Sea Temperature and Salinity," respectively by Profs. Duffield, Herdman, and Holt.

ADVENTISTS. The Seventh Day Adventists, the largest branch of this denomination throughout the world had at the close of 1913, 122,386 communicants, a gain for the year of 12,794. In North America there were 71,054 communicants. The churches numbered 3589, a gain of 715 during the year. The total funds for evangelistic work contributed by the members of the denomination during 1913 was $2,866,727. Of this amount, 62 per cent was raised in tithes, which is the main source of revenue of the denomination. The total value of church buildings at the end of 1913 was $12,812,784. The denomination conducted 786 schools, having an enrollment of 27,379. There were 37 publishing houses and branches under the control of the denomination. Over 1600 missionaries were stationed in 67 different countries. To support this work in foreign lands there was expended $911,769.

The other branches of the denomination are the Advent Christians, with about 27,000 communicants, 550 churches, and 530 ministers; Church of God in Jesus Christ, with 2224 communicants, 68 churches, and 61 ministers; the Evangelical Adventists; the Church of God; and Advent Union. The three last named have only several hundred communicants each.

ÆGEAN ISLANDS. See GREECE.

AËRONAUTICS. Activity in aëronautics during 1914 naturally consisted principally in the military use of aëroplanes and airships, and in their construction in large numbers for the fighting armies rather than in new and striking developments. Such practical applications afforded ample opportunity to test not only theories as to their actual use in warfare, but also the strength and features of design and construction followed or favored by the aëronautical divisions of the various armies. In the main such operations were kept profound secrets during the year, and few technical details were forthcoming. It may be said, however, that the chief use of aëroplanes was in determining the position of the enemy and especially for determining ranges for field and siege guns, thus increasing the accuracy of artillery fire. Various raids were made and explosives were dropped from aëroplanes and airships, but this branch of warfare, aside from its spectacular nature and moral effect did not play an important part in the conflict. Reference to the articles, MILITARY PROGRESS and NAVAL PROGRESS, will show what was accomplished on land and sea by aëroplanes and airships, as well as their tactical uses and the lessons derived.

More than ever in view of the European War the economic importance of aëronautics figured. It was estimated that the warring nations previous to the war had spent $100,000,000 on aëronautical equipments, and had proposed to spend $200,000,000 more in the next two years. At the opening of hostilities it was thought that they possessed in the aggregate some 5000 aëroplanes, and over 100 dirigibles. Statistical information on this score was distinctly vague and inadequate. Also in regard to developments much of the recent work had been done at government factories or by private factories under government auspices, and government control, so that little news had leaked out as to the extent or nature of special advances in design and construction, and in fact it was only through the appropriation bills discussed in the various parliaments that any adequate idea could be formed of the nature and extent of the equipment, except such as was obtained through military and naval channels. Germany and Russia for two years previous had kept secret their progress in military and naval aëronautics, while in 1913 Great Britain and France also decided to limit the announcement of developments and increase in the strength of their aërial fleets as well as experimental developments. As a result little exact knowledge was popularly held of what had been done by the governments during the year, while manufacturing for exhibition purposes or for private owners had not reached the point where it assumed preponderating importance.

In the United States soon after the outbreak of the war the European Powers were in the American markets for aëroplanes and aëroplane equipment, and orders were placed with American manufacturers. The nature and extent of these naturally also were kept secret, but it was known that the end of the year 1914 the larger manufacturers were active, and the factories were running to capacity.

In connection with the use of aëroplanes in the war, it was early developed that these machines themselves in view of the limited facilities for their replacement, were too valuable to use in actual fighting, as they were far more useful for reconnoissance and range finding for artillery. In fact as will be discussed under MILITARY PROGRESS, the rôle of the aëroplane in connection with firing both of artillery and the finding of artillery positions assumed an importance that hardly had been realized.

The increased length and time of duration of flights during the year indicated more perfect control, greater reliability and endurance of all the leading models. This reflected better engine construction and embodied the results of scientific study and elaborate experimentation, conducted in well-equipped laboratories, which had been established in Europe, and which in a far lesser degree had been inaugurated in the United States. In preparation for the transatlantic and other long distance flights, reliability and endurance tests of motors were made, and these represented substantial achievement and promised well for performance in actual flight. Perhaps one of the most important results of the year to be observed was the increased flexibility in speed, that is, aëroplanes were flown with not only greater maximum speed, but also were able to fly at lower speeds and capable of variation of speed between these limits. In addition, an important feature of the year was the addition of automatic stabilizing devices, which tended greatly to facilitate the task of the pilot and made flight more convenient, as will be seen from the subjoined records. Satisfactory performance with greater carrying capacity was another feature of the year's work, and the development, though slow, was steady, and indicated positive advance.

As showing the practical development of the modern aëroplane the statement was made during the year that the English Army Aëroplane Squadron flew under their own power from the base of operation in England to the seat of action in France, where they proved of great advantage in reconnoitring the forces.

TESTING THE LANGLEY AËRODROME. An important event of the year in aëronautics was the testing of the Langley aërodrome, built in 1903. This machine and its engine were shipped from the Smithsonian Institution to the Curtiss factory at Hammondsport, N. Y., early in April for this purpose. Mr. Glenn H. Curtiss conducted the tests, which were intended to prove beyond peradventure that the large Langley aërodrome of 1903 was capable of sustaining free flight with a man, and had it not been for accidents in the launchings of September and December, 1903, it would have demonstrated successfully at that time the practical possibilities of sustained flight by a machine heavier than air. The original machine was reclothed without change of size or shape, and the framing, engine, propellers, wings, rudders, and controls were put in adjustment just as Langley left them. The first change was to add a modern radiator and carburetor, and to employ floats, so that the machine could rise from water. In this way over 200 pounds extra weight and considerable air resistance was added to the original machine. On May 27, Mr. Curtiss mounted the machine, which, without wings and tail, was adjusted for a preliminary trial on the surface of the lake. It made a short though successful run over the surface of the lake, skimming along in such a way as to indicate that with the addition of the wings successful flight could be accomplished. This was achieved on the following day, when the machine rose on an even keel, and sailed over the surface of the lake under the control of the aviator. The addition of the floats and the trussing connected with the aëroplane proper, together with the additional weight of Mr. Curtiss as the pilot, increased the weight of the machine some 40 per cent over its weight of 1170 pounds when tested in 1903 with Mr. Manly as pilot.

It is of interest to refer to this machine and to recall some of its general features. It was the first aëroplane provided with an internal combustion motor, the first capable of carrying a passenger in sustained flight, and the first aëroplane designed with inherent stability to take care of itself in bad weather. It was a tandem monoplane driven by twin propellers, and above were mounted four great dragon-fly wings, with a long double tail, while the steering rudder was placed beneath and behind the centre. These wings were connected to a steel frame and the propellers on either side were run from bevel gears, connected with an engine placed in the frame, behind the forward wings. Unlike modern aëroplanes no running gear was provided, nor pontoons, as it was designed to employ a special launching apparatus, a feature that proved most disastrous in the original tests.

Later in the year a Curtiss 90-horsepower motor with a direct connected tractor screw was mounted on the forward part of the frame of the Langley aërodrome in place of the original motor and twin propellers. This was done in view of the fact that the success of the original motor had been established in raising the machine and maintaining it in flight, but it was not desirable to overstrain its capacity, especially in view of its importance as a historic relic. Various tests of the aërodrome were made. The aërodrome over short voyages was under easy control, but naturally lacked the ease of operation of modern airships, as in the wings anemometer adjustments had been provided by Professor Langley, which were dependent on the wind-vane or vertical rudder, and the big tail or elevator. The latter being used by the Curtiss investigators instead of the wind-vane rudder, which Langley thought could steer the machine. This series of experiments conducted at Hammondsport proved of great value in demonstrating the possibilities of the original machine and added to the historic record made by Professor Langley and his associates and their successors.

THE SCHMITT BIPLANE. In the Paul Schmitt biplane, with which some notable records were made during the year, a novel method of varying the incidence was obtained, in which the maximum efficiency was preserved with variations in load and motive power. This made it possible for the machine to rise after a very short run with the tail high, without the use of wings as a brake; in fact it could rise or alight in an enclosure 400 feet long surrounded by a fence 6 feet high. The Paul Schmitt biplane, as developed in 1914, was made with a fuselage of steel tubes autogenously welded and of quadrangular section, and carried a 160-horsepower Gnome motor. Two planes were furnished and were the most interesting portion of the machine, rotating about a transverse horizontal axis, placed high up between the planes and about one-fourth of the distance from the front to the back. This axis consisted of a tube mounted on ball-bearings, carried on a pair of inverted V-stanchions. Its extremities were rigidly attached to two sections of the oval tubes placed far out between the front and rear uprights of the central cellule. The uprights pass through the fuselage, and are connected at the bottom by steel tubes as also at the top. The pivoting of the plane is controlled by a strong thread, carried on ball-bearings attached in a longitudinal position to the bottom of the fuselage. This shaft is prolonged behind the rear bearings and terminates in two concentric sprockets, connected by chains with wheels controlled by the pilot. These wheels permit of a slow or more rapid movement so that the cellule and the planes to which the cellule is attached can be swung through an arc of from 10 to 12 degrees, the amount of rotation being controlled with a nicety by the two hand-wheels. The planes are divided into two parts, each assembling into the central cellule. There are large ailerons fitted in the proper place, while the elevator is very large and forms an entire tail plane being perfectly flat and of the nonrevolving type. There are two rudders, one above and one below the elevator, both rudders and elevator being composed of steel tubes, covered with fabric.

In connection with the development of useful military aëroplanes, a new Curtiss military tractor was brought out during the year and tested at the Army Aviation Camp on North Island, near San Diego, Cal. It was known as the Model J, Curtiss military tractor, and was equipped with a 90-horsepower OX Curtiss motor. The width of the wings of the upper plane was 42 feet, 2 inches, and of the lower plane 30 feet. With the pilot, passenger and four hours' supply of fuel it maintained a maximum speed of 85.7 miles an hour, and a minimum speed of 41½ miles. It was able to climb 4000 feet in 10½ minutes.

The new Wright military flyer, known as Model H, also was brought out during the year. It was a biplane of the two-passenger type with a fuselage, and was driven by a Wright six-cylinder 60-horsepower engine, placed under the front hood of the fuselage, the hood being removable so as to make the motor accessible. The planes had a total area of 350 square feet, and were 36 feet in width, and 26½ feet from front to rear over all, and a height over all of 9 feet. A speed of 70 miles an hour was maintained, and the machine could climb 400 feet per second with two men and fuel for 4 hours. There were two propellers in the rear of the main plane driven by a motor at the extreme front of the fuselage, and the pilot and passenger sat side by side behind the motor, with a duplicate system of control operated from both sides.

The Wanamaker Transatlantic Flyer. In February, 1914, Mr. Rodman Wanamaker of Philadelphia announced that he had commissioned Glenn H. Curtiss to build a floating flying boat capable of making a transatlantic trip in a single flight of from 12 to 15 hours. This seemed to indicate the most complete preparations for crossing the Atlantic Ocean, and that competent authorities considered the project possible in view of the flight of Ingold, who covered a distance of 1000 miles in 16 hours, and of Stöffler, who had made 1340 miles in 24 hours. The question of whether the flight would be a successful one hinged largely upon the motor and its reliability. The original plan involved a tractor biplane with one direct connected 200-horsepower engine, with a detachable running gear, which had a water hull for sea driving in case of necessity and water-tight compartments, for the safety of the aviators. The plan was to rise from St. Johns, N. F., leave behind the chassis, ascend to a point two miles above sea-level, and with a permanent easterly wind of an average speed of 50 miles an hour, and with the 60 miles speed of the aëroplane itself, proceed direct to Ireland and cover the journey in some 18 or 20 hours. As this plan would not permit of rising or resting on the ocean, in case of stoppage of the motor or other mischance, it was decided instead to use a large Curtiss flying boat, capable of carrying two passengers with supplies for more than twenty hours, and capable of descending and rising at will in mid-ocean. It was not intended to take advantage of the upper streams of the atmosphere, but to start when the weather forecast seemed propitious, and lay a direct and practical course, flying as circumstances dictated.

Accordingly the flying boat was constructed along these lines, and was the largest flying craft ever built in the United States. It measured 72 feet from wing tip to wing tip on the top plane, and 46 feet on the bottom plane; it measured 38 feet from prow to the end of the vertical rudder; it spreads 500 square feet of wing surface, the wings being 7 feet wide, having a gap between them of 7½ feet. Complete with two men and supplies, the flying boat weighed about 5000 pounds, the hull was 34 feet long, 4 feet in beam, and 6½ feet in depth. It embodied most of the features previously employed in the Curtiss flying boats, with additions for the comfort of the pilots for an extended voyage. There were four water-tight compartments within the hull, and gasoline tanks with an aggregate capacity of 1500 gallons, which could be pumped above to the feed tanks and supplied by gravity to the engine as required. In designing the wings of the machine the contour was found only after a systematic aërodynamic investigation, which had been conducted by the British Government, and found to be the most efficient and practical wing. The two engines were each of 90-horsepower, and water jacketed, running at 1200 r.p.m., and weighed together 690 pounds. The radiators weighed 62 pounds each. A 30-hour continuous test was held, in which time the engines together consumed 288½ gallons of gasoline, and 10⅝ gallons of oil, or about 1800 pounds. As pilot of the transatlantic flyer, Lieut. John Cyril Porte, R. N. of England, was selected as navigator, and Mr. George Hallett as chief aviator, it being planned that Mr. Hallett should be dropped at the Azores, and Mr. John Lansing Callan of the Curtiss Flying School should take his place to complete the trip.

The new Wanamaker flyer was christened at Hammondsport on June 22, and received a successful trial subsequently. In preliminary tests the total weight carried was about three-fourths of a ton short of the 5000 pounds to be lifted at St. Johns, and the engines were run at a less speed. Nevertheless, the craft performed successfully. In the course of the experiments large pontoons were also attached to either side of the boat flush with the bottom, and planing boards, making what was known as a sea-sled, were used, and the bottom of the hull was remodeled. A third motor late in July was fitted in place, which, while it increased the weight, nevertheless increased the lifting power. The third motor propellers were mounted on the top of the upper plane in its centre of lift. The experiments had as their object to determine whether the aëroplane flight was possible with two of the motors working and the third held for a reserve or for lifting power.

In connection with the cruise of the *America* many aviators thought that the hardest task would be to lay and maintain a course from St.

Johns to the Azores, as was finally decided on, a distance of about 1080 miles on Mercator's Projection. The course as laid out in land miles was: from St. Johns to the Azores, about 1198 miles; from the Azores to Spain, 927 miles; to Ushant on the coast of France, 413 miles; to Falmouth, in England, 95 miles.

The *America* represented a vast amount of experimentation and research, and during its construction and testing changes were being made, and the fundamental ideas were being developed. This was no less important than that the boat as originally designed should have used the experience acquired. Unfortunately, the outbreak of the war required the postponement of the actual trip of the *America*.

SIKORSKY AËROPLANE. The Russian aëroplane or "aërobus" of Sikorsky made a number of records previous to its destruction in the military operations of the war. On June 19 he rose to a height of 2000 meters (6200 feet) with 10 passengers, in 1 hour, 26 minutes, and 21 seconds, and during the night he made a flight with six passengers which lasted for 6 hours, 33 minutes, and 10 seconds. The aëroplane was fitted with two Salmson 200-horsepower motors. It was reported later in the year that this large aëroplane had been destroyed by shell fire on the frontier. It was an aëroplane of considerable capacity, but not of high speed, and it was understood to be a prototype of a number of other machines which had been ordered by the Russian Government. The dimensions of the *Ilya Murnatz* were: span 121 feet, chord of the planes 9 feet, with a covered-in fuselage 65 feet from nose to tail, and 6 feet in height by 5½ feet in width. The fuselage carried a small cabin for the two pilots in the nose and had a cabin for the passengers with a small sleeping compartment, and a very small lavatory, and these cabins were lighted by electricity, and heated by the exhaust from the engine. The rudder had an area of 55 square feet. The chassis was mounted on disc wheels sprung on elastic shock absorbers, which supplanted the skids used in the original design. This machine carried aloft 18 human beings, and represented standard ideas in aëroplane construction, its extreme size being its important feature.

"MARK R. E." BIPLANE (BRITISH). In the spring of 1914 the *Mark R. E.* biplane, the product of the Royal Air Craft factory of Great Britain, was tested with considerable success. This tractor biplane with four propellers is driven by a 120-horsepower Beardmore-Austro-Daimler motor. The letters "R.E." stand for "Reconnoisance Experimental," and were a modification of the "D.E." of Bleriot, an experimental machine also turned out by the Royal Air Craft factory, and a number of which were in use in the British service. This new aëroplane was said to be inherently stable. Colonel Seeley, Secretary of State for War, announced that he had taken part in a demonstration early in May, in the course of which at a height of 2000 feet the pilot abandoned all control of the machine and he himself steered the machine about. The aim in this British military aëroplane in securing additional stability was not so much to make it easier for the pilot, as to economize energy so that he could pay greater attention to observation, and in the event of the observer being incapacitated the pilot could obtain in large measure the information desired in the reconnoissance.

One of the interesting features of the year was the development of various devices to secure increased stability in aëroplanes. The Sperry Gyroscope, controlling the Dunne machine in which the design and construction produced increasing steadiness, and the automatic control as in the Doutre stabilizer were extensively tried. In some of these the action is automatic, while in others where the pilot attempts to assume control and wishes the machine to respond quickly the action is likely to be sluggish, leading to embarrassment in certain situations.

One of the important constructions of the year was the Burgess-Dunne sea-plane, which made use of the English patents of Lieutenant Dunne, and the experience gained in this field by the Burgess interests of Marblehead, Mass. The principle of the Dunne machine was not new, but the system as worked out provided an increased inherent stability in flight. This sea-plane was efficiently tested at Marblehead on May 2 by representatives of the Aëro Club of America and found perfectly satisfactory.

THE SPERRY GYROSCOPIC STABILIZER. This device, invented by Elmer A. Sperry, and used on a Curtiss flying boat in a safety test, on June 18, received the first prize of $10,000 offered by the French War Department, with a second prize to the Paul Schmitt Aëroplane Company. Lawrence Sperry, the son of the inventor, was pilot, with a mechanician to assist him, and he performed a number of notable feats, standing up in the machine with arms folded and sending his mechanician to the end of the lower plane and back. This apparatus consists of a group of four gyroscopes arranged in two pairs, each pair revolving in opposite directions in order to neutralize the precessional movement. One pair revolves in the plane of symmetry of the aëroplane, and the other in the vertical plane parallel to the span. Each group is contained in a sort of cage, composed of two rings, one horizontal and one vertical. In normal flight these gyroscopes keep the axes of these rings directly horizontal and vertical, so that any dipping of the aëroplane is instantly corrected through the servo-motors, and these servo-motors, it must be understood, by the planes or their valves, control the elevator and ailerons. The levers which act on the valves are attached to the rings above referred to. There is an anemometer which furnishes the pilot with a visible record of speed at any moment, and prevents the machine from rising so speedily that there is danger of its falling back on its tail. This anemometer through its servo-motor blocks the longitudinal control lever, and prevents further climbing when the aëroplane approaches the critical angle, and starts it automatically on a descent, until normal flying speed is regained. It also regulates the action of the gyroscope in turning and controls the angle of inclination with the velocity of the machine. The gyroscopes are electrically driven, and weigh only two pounds each, turning at 12,000 r.p.m., with current from an alternating current dynamo, run from the front end of the motor by a belt, with a battery carried in reserve. The wireless installation can also be operated from the dynamo. Compressed air is obtained from the motor and stored in a tank similar to that used in compressed air self-starters for motor vehicles. The total weight of the apparatus is about 45 pounds. New devices render the operation of the machine practically automatic, and control can be abandoned by the pilot without affecting the stability of the machine. The ailerons automatically change their angle of incidence and keep the plane on an even keel. With this automatic climbing is possible and the stabilizer works successfully in high winds. With the stabilizer in action, the ordinary means of control are completely blocked, but the direction of the machine can be changed by small supplementary levers. The Sperry gyroscopic control was demonstrated before a committee of the Aëro Club of America on December 8th.

COMPETITIONS.

On account of the war aëronautical competitions naturally languished, and over $1,000,000 worth of prizes were called off. For the first time the Gordon-Bennett aviation race, which would have been started at Buc, France, was called off, and many others that had been arranged were abandoned. Nevertheless, in the first half of the year some important competitions were held, which indicated progress in aviation.

The Monaco Rallye Aerien, which lasted from April 1 to April 15, included a race from seven capitals of Europe to Monaco, and of the 25 competitors entered, 12 participated. Five complete trips were made, and the competition was won by Roland Garros, who made the distance between Monaco and Paris, 1293 kilometers, in 12 hours, 14 minutes, 21 seconds, of which time he was over land 10 hours, 32 minutes, 53 4-5 seconds, and over sea 1 hour, 41 minutes, 27 1-5 seconds. He also made a trip from Brussels to Monaco, a distance of 1293 kilometers, with the flying time of 12 hours, 27 minutes, and 13 seconds, of which time he was over land 10 hours, 7 minutes, and 18 seconds (a record), and over sea 2 hours, 19 minutes, 55 seconds.

PANAMA PACIFIC INTERNATIONAL EXPOSITION AROUND THE WORLD FLIGHT. Previous to the outbreak of the war, prizes of $150,000 were announced for successful competitors in a race from the Panama Pacific Exposition Grounds in San Francisco, starting May 15, 1915, around the world, to be completed before Dec. 4, 1915. In spite of the question whether conditions would permit of the holding of this race, the regulations proposed are interesting as indicating the conditions and status of long distance aëronautics in 1914. The competitors were to pass over the course in an easterly direction, and were to alight at the various controls designated by the Exposition authorities, where each flyer would submit his log-book and instruments to the officials in charge. Each aircraft was to follow on from one control to the next, but supplies and battery service were to be provided only along what was considered the most feasible route to traverse. The distance between controls must be traversed by the same aëroplane, but a stop could be made anywhere for repairs, even to the extent of installing new motors, and at any control the machine might be abandoned, and another one taken if it were of the same type of air-craft. When the plan was suggested, $100,000 of the prize money was to go to the flyer finishing first, $30,000 to the second, $20,000 to the third, provided the flight was made within 121 days. If this time is exceeded the first prize would be reduced $1000 a day for each day over the 121, and a corresponding reduction would be made in the second and third prizes. Deductions were also to be made for aëroplanes which were successful, except as regards the crossing of the Atlantic or Pacific Ocean or any other body of water, and corresponding arrangements for prizes and deductions were to be made for other competitors finishing in order.

The usual important competition over the Prince Henry circuit in Germany was made May 17–25, and 12 competitors out of 40 entries covered the 1800 kilometers course. In the reliability trials for aviators and passengers, the race was won by Lieutenant Von Thüna in a L. V. C. biplane, whose flying time was 17 hours and 16 minutes. An interesting flight of the year was made by Eugene Gilbert in a flight for the Michelin cup in the course, 841 miles in 39 hours, making a tour of France.

Among the few competitions held in the United States during the year was the Fourth of July aviation race at New York, with four contestants, over a 46-mile course, starting and finishing at the Atlantic Yacht Club, Sea Gate, near Coney Island. The race was won by H. Kantner in a Schmitt monoplane fitted with floats and equipped with a 50-horsepower gyroscopic motor. He covered the course in 43 minutes, 26 1-5 seconds, an average speed of over a mile a minute. The second was Albert S. Heinrich in a Heinrich monoplane, equipped with floats and driven by a 50-horsepower Gnome motor. His time was 46 minutes, 46 4-5 seconds for the course.

In England previous to the outbreak of the war several important competitions were held. The London-Manchester-London aëroplane race on July 10 was won by W. L. Brock, an American airman, who thus secured the gold cup of the London *Daily Mail* and $2000 in cash. He covered the double journey of 322 miles in the actual time of 4 hours, 42 minutes, and 26 seconds, or an average of about 64 miles an hour. He used an 80-horsepower Morane machine, with Gnome motor. In this competition but 3 of the 8 contestants finished. Brock also won the circuit-of-London aëroplane race, 100 miles, in 1 hour, 18 minutes, 14 seconds, on June 20, and the British Aëro Derby on July 11. Another triumph was scored by Brock in the London-Paris-London race, where his time for 580 miles was 6 hours, 59 minutes for the round trip, but 14 minutes more than the fastest time by boat and rail from London to Paris. Brock's time was 3 hours, 33 minutes, and 24 seconds, while Garros's record for the round trip was 8 hours, 28 minutes, and 47 seconds. Both aviators flew in 80-horsepower Morane-Saulnier monoplanes.

The Schneider cup for marine flying was competed for at Monaco on April 20, with nine entries from five countries. It was won by C. Howard Pixton, British, in a Sopwith 100-horsepower hydro-biplane, which accomplished 150 nautical miles in 2 hours, 13⅗ seconds; the second being M. Burri of Switzerland in a F. B. A. flying boat, with a flight of 3 hours, 24 minutes, and 12 seconds.

One of the notable flights of the year was made by the German aviator Boehm, in a standard German Army Albatross biplane, consisting of 1350 miles, in 24 hours and 12 minutes. The flight lasted until 132 gallons of petrol, the supply carried, had been exhausted, but the aviator himself would have been physically fit for another twelve hours' flight. The machine was driven by a six-cylinder 100-horsepower Mercedes motor, and the record was the culmination of a number of attempts in this direction made during the year. Thus Paulet, in a Caudron aëroplane, April 27, made a flight of 16 hours, 28 minutes' duration, and on June 23, the German aviator Basser in a Rumpler biplane flew all night, a total time of 18 hours, 11 minutes, without stopping. While Basser was in the air another German, Landsmann, went aloft, and being caught in a storm was forced to alight, having made a flight of 17 hours, 17 minutes, but on June 27 he flew over the course from Johannisthal to Schulzendorff, without stopping, for 21 hours, 49 minutes, making a distance of 1900 kilometers. He stopped only when his fuel, consisting of 625 liters (165 gallons) of gasoline, and 50 kilograms (110.2 pounds) of oil were exhausted. Landsmann's machine was an Albatross biplane, which was well used by Boehm in his record flight.

Full, interesting, and complete records for pilot and passenger were made on June 19 by Eugene Renaux at Etampes, France, in a M. Farman biplane. The new records were as follows:

Kilometers	*Hours*	*Minutes*
250	21	56
300	50	28
350	18	44
400	47	17
450	15	29
500	48	16

Those from 250 to 400 kilometers took the place of those of Garaix. The others were new records.

In 1914, Garaix, in a Paul Schmitt biplane, made a wonderful series of height records. On March 28 he ascended to a height of 1580 meters (5182.4 feet) with eight passengers, and 150 liters (33 gallons) of gasoline, and 40 liters (8.8 gallons) of oil, making a total useful load of 758 kilograms (1667.6 pounds). The record height was reached in 44 minutes. On March 31 he made a final record of 1590 meters (5215.2 feet) with nine passengers, taking the same amount of gasoline and oil as before, making his useful load 833 kilograms (1832.6 pounds). By July 1, 1914, Paul Schmitt's biplane held the following world's record for height:

Passengers	*Meters*	*Feet*
4	3150	(10,332)
5	2250	(7380)
6	1750	(6740)
7	1600	(5248)
8	1580	(5,182.4)
9	1590	(5,215.2)

On April 22, Garaix, with six passengers, broke 27 records for speed, distance, and duration, with two, three, and four passengers, and had 11 new records. The 10-kilometer circuit was covered 11 times in 1 hour, 2 minutes, and 25 3-4 seconds, with a total load of 620 kilograms (1364 pounds), of which 465 were the pilot, 10 ballast, 105 gasoline, and 40 oil. His new records established, with speed, pilot, and six passengers, were as follows: 10 kilometers (6.2 miles), 5 minutes, 35 seconds; 20 kilometers (12.4 miles), 11 minutes, 12⅕ seconds; 30 kilometers (18.6 miles), 16 minutes, 48⅘ seconds; 40 kilometers (24.8 miles), 22 minutes, 28⅕ seconds; 50 kilometers (31 miles), 28 minutes, 5⅖ seconds; 100 kilometers (62 miles), 56 minutes, 44 seconds. Distance in one half hour: 50 kilometers (31 miles). Distance in one hour: 104.141 kilometers (64.6 miles). Greatest speed: 107.462 kilometers (66.6 miles) per hour. Duration: 1 hour, 2 minutes, 25⅗ seconds. Total distance: 110 kilometers (68.2 miles).

Garaix also made a notable performance on a Schmitt biplane at Chartres on July 2, carrying three passengers, when he went aloft for a flight of 4 hours, 3 minutes, and 29 seconds' duration.

The following altitude records, made at Vienna, June 21–28, are of interest:

Pilot and one passenger....	6170 meters.	Lieut. Beer
Pilot and two passengers...	5440 meters.	Lieut. Beer
Pilot and three passengers...	4470 meters.	Von Loessl

A new world's record for altitude of over 7500 meters, which was finally corrected to 26,246 feet (4¾ miles), was made at Leipzig on July 4 by Heinrich Oelrichs, thus supplanting the altitude record made at Johannisthal on July 9 by Otto Linnekogel of 6600 meters (21,654 feet).

Among the few records made during the year 1914 in the United States, was one for cross country flight of 365 miles, made by W. C. Robinson, the Wright and Nieuport pilot of Grinnell, Iowa, who flew from Des Moines to Kentland, Ind., in a new monoplane of his own construction. The altitude record for an aviator alone was made on Aug. 6, 1914, by De Lloyd Thompson, who at Overland Park, Kansas City, ascended to a height of 4600 meters (15,256 feet) in a Day tractor having 25 feet spread and 4.4 inches chord, driven by an 80 horsepower gyro-motor. This record, however, was supplanted on October 8 by one made by Capt. L. R. Muller, U. S. A., of the aviation corps, in a new Curtiss tractor, at San Diego. He rose to a height of 17,185 feet, thus making the American record.

DIRIGIBLES.

An interesting feature of the use of a Zeppelin in dropping bombs over Antwerp was the repair to one of its propeller frames, damaged by shocks from a Belgian battery. Although the airship was somewhat 6000 feet in the air, the shock seriously damaged a portion of the frame and interfered with its operation. One of the mechanics in the car climbed out on the injured framework and was able to clear up the damaged parts, and also to repair a long rent in the hull that had been hit by a shell.

On June 20, the Austrian airship *M3* was destroyed with a loss of nine lives, in one of the most sensational accidents ever recorded. This airship, which was of the Körting type, was built in 1911, and was 65 meters (213.25 feet) in length, with a gas capacity of 3600 cubic meters. It went into the air at Fischamand, near Vienna, and was pursued by an aëroplane piloted by Lieutenant Flatz. The latter overtook the airship at a height of about 400 meters (1312.33 feet), and attempting to rise over it, struck the gas bag, causing an explosion and the capsizing of the aëroplane. The airship carried a crew of seven officers, and the men, with the exception of an engineer, all soldiers, were killed and burned, while Lieutenant Flatz and Lieutenant Puchta of the Austrian navy were killed instantly.

A record of 34 hours in the air was made in the spring by the German Zeppelin *L3* on a voyage from Friedrichshafen to Potsdam. In this trip an average speed of nearly 60 miles was claimed, and while over Heliogoland the *L3* was in communication with the dirigible *LZ24* over Friedrichshafen.

Just previous to the outbreak of the war, the French military dirigible, the *Adjutant Vincenot*, made a new record for continuous navigation by an airship, being in the air 35 hours and 20 minutes, thus eclipsing the record of the German Zeppelin, *L3*, of 34 hours and 59 minutes, made on May 22. The *Adjutant Vincenot* made the trip from Toul, France, to Paris, leaving Toul, June 28, and after covering a wide circuit landing late on the night of June 29.

AËROSTATION.

In ballooning as well as in other branches of aëronautics the effects of the European War were evident. The Gordon-Bennett International Balloon Race, which had been won in 1913 by the American balloon *Goodyear*, and accordingly should have been held in the United States in 1914, was abandoned. This race would have taken place at Kansas City on October 26, but, as with the exception of the United States and Switzerland, the entries were from countries at war, it was impossible to arrange it. In the United States, however, the National Balloon Race was held as usual, and was won as in 1913 by the balloon *Goodyear*, though the distance, 301.82 miles, was considerably shorter than in any previous elimination, the record standing at 914 miles, made in 1912. This competition was held under the auspices of the Aëro Club of St. Louis, Mo., on July 11, 1914; 11 balloons entered, 8 appearing when the meet was held. The heat was intense, in fact sufficient to burst one of the balloons before it could ascend, and to this was due the short distance accomplished. The balloons competing, and other information as regards this race, are summarized below:

Balloon	*Pilot*	*Aide*	*Landing*	*Dist.*
Goodyear	R. A. D. Preston	M. D. Tremelein	Near Constance, Ky.	301.82
Pensylvania, II	A. T. Atherbolt	P. T. Sharpless	Near Rockville, Ind.	174.84
Uncle Sam	P. T. McCullough	W. H. Trefts	Near Lewis, Ind.	171.20
Aëro Club of St. Louis	John Berry	A. Von Hoffman, Jr.	Near Terre Haute, Ind.	167.80
Miss Sophia	W. F. Assmann	(No aide)	Near Flat Rock, Ind.	147.70
America III	Jerome Kingsbury	O. P. Wynne	Near Princeton, Ind.	140.80
San Francisco, 1915	E. S. Watts	Ralph Emerson	Near McLeansboro, Ill.	109.80
Kansas City, II	John Watts	W. F. Comstock	Near Enfield, Ill.	107.40

Previous to the National Balloon Race, an interesting competition was held at Portland, Ore., on June 11, four balloons competing. While the distances made were not great, yet the event indicated the general interest in the spherical balloon, and the accompanying summary is interesting:

Balloon	*Pilot*	*Landing*	*Time*	*Miles*
Kansas City, III	John Watts	6 miles east of Cascadia	17.10½	82¾
Springfield, No. 3	Roy F. Donaldson	At Blue Lake	14.35	48½
Million Population Club	John Berry	2 miles S.W. of Clarke	3.59¾	28
Uncle Sam	H. E. Honeywell	¾ mile N.E. Beaver Creek	3.29⅛	19

Another balloon race arranged somewhat hastily and accompanied by automobiles, was started from Pittsfield, Mass., on October 8. The balloons participating, the names of the aviators and aides, were as follows:

Dancing Doll, A. Leo Stevens and Gordon Bruc; *L'Ecuriel*, Robert Glendenning and Sidney Welsh; *I. C. U.*, Dr. Jerome Kingsbury and W. H. Richardson; *The North Adams*, Allen R. Hawley and Doctor Von Utassy.

The latter was the king balloon, and was the first to ascend. Thirty-five miles was the maximum distance in the flight, and the cup was won by *L'Ecuriel*, of Mr. Glendenning. A cup was also awarded to the automobile which was the first to reach the point of descent of the leading balloon.

The world's distance record for a voyage in a spherical balloon was broken February 8–10 by Hans Berliner, who, with two companions, ascended at Bisserfeld, Russia, and traveled a distance of 1897 miles, thus beating the record of Kaulen in the German balloon *Duisburg*, made on a trip starting Dec. 13, 1913, and aggregating a distance of 1740 miles. The German balloonists on alighting in Russia were arrested for traveling over the country and landing without government permission, and on being found guilty were sentenced to fine and imprisonment.

An important event in American aëronautics was the announcement by the Massachusetts Institute of Technology that it would offer a graduate course in aëronautical engineering under the direction of Prof. Cecil H. Peabody, of the Department of Marine Engineering, and under the general direction of Assistant Naval Constructor J. C. Hunsaker, U. S. N., who had made elaborate investigations and researches in this field, and whose work has been particularly helpful to students of aviation.

During the year 1914 the British Government recognized the validity of the Wright patents obtained for certain features of aëroplanes, and settled with the Wright interests for past and future uses of the devices so protected by the payment of the sum of $75,000. While this sum was less than was originally claimed, yet the settlement was made so as not to embarrass the government under the war conditions and in its work of manufacture. The settlement carries with it, however, a distinct recognition of the work of the Wrights as the original inventors in this field.

Had it not been for larger questions raised by the War of 1914 there would have been considerable discussion of legislations and regulations connected with aërial navigation. The Aërial Navigation Act of Great Britain of 1913 was very specific, containing a number of restricting clauses. New questions were arising in various other countries. One of these was whether aëro boats should be covered by the rules of the road at sea, and licensed and controlled in the same way as high speed motor boats. It would seem that the time was ripe for some discussion at least, if not for actual legislation in regard to it.

A military and naval competition was held in Great Britain during the year to determine the best and most suitable motors for government use. A prize of £5000 was won by an engine of 100-horsepower with steel cylinders 140 by 152 millimeters (about 5.51 by 5.98 inches), water cooled, with copper jackets and with valves in the head operated by an overhead cam shaft. This engine, which weighed 450 pounds, was constructed by the Green Engine Company. The following eight other firms, whose engines successfully survived a preliminary elimination run of six hours, received £100 each: Argyle, Ltd., Beardmore-Austro-Daimler Engine Company, British Anxani Engine Company, Dudbridge Iron Works Company, Gnome Engine Company, Sunbeam Motor-Car Company, Wolseley Tool and Motor-Car Company.

A military aëroplane competition was scheduled for 1914 by the Signal Corps of the United States army, but was called off in October because the eleven entrants failed to file the necessary plans, specifications, and data, required under the rules, although three machines were on hand. This competition called for the most advanced standards and in case of a tractor biplane demanded a weight carrying capacity of a pilot and passenger of 150 pounds weight, oil and fuel for a four hours' flight, and 450 pounds of dead weight in all tests. The various items and specifications included the construction, workmanship, mechanism, minimum speed in rising and maneuvring, and handling of the machine, the inherent stability, suitability of lighting, gear cleaning, length of run in starting and alighting, and field of vision. The three best machines meeting the requirements of the judges were to have been purchased for $12,000, $10,000, and $8000, respectively. It was considered doubtful whether the condition of climbing 4000 feet in 10 minutes could be met with, the opinion being held that it could be done only by a machine of at least 100-horsepower with a revolving cylinder motor. The three machines which appeared for test were supplied with water-cooled motors of the 8-cylinder V-type. One of these with an 85-horsepower motor flew with a speed variation of 45 miles per hour, and afterwards, when piloted by Lieut. H. L. Muller, made a height record of 17,440 feet, when going a distance of 130 miles, carrying 3 persons, on September 26. The two other machines, each of which was equipped with a 100-horsepower motor, flew from San Diego to Los Angeles.

During the year the United States Navy Department requested information of eight American manufacturers of balloons and aëronautical apparatus in reference to supplying the United States with dirigibles, considering at that time the purchase of at least two of a minimum displacement of at least 75,000 cubic feet. These manufacturers were asked to submit estimates for supplying one or more airships of the various types that had been used in Europe and could be manufactured in this country, and also for two airships of such a type, and a third estimate for two airships of different types. It was proposed to use any airships purchased under special conditions for training an adequate personnel, and gaining experience for future developments in this field. The necessary appropriation was available, and the Navy Department was anxious to secure dirigibles of large size, and not such small dirigibles as previously had been in use by the army, which were not to be considered seriously in view of modern conditions.

AËROPLANE. See AËRONAUTICS.

AFGHANISTAN. A central Asian monarchy, practically under British domination, and having foreign relations only with the British-Indian government. Capital, Kabul, with about 70,000 inhabitants. The total area is estimated at about 225,000 square miles, and the population at about 5,000,000. The inhabitants are turbulent tribesmen, belonging mostly to the Sunni sect of the Mohammedans. They engage in grazing and agriculture. Cereals, lentils, fruits, live animals, raw wool, silk, carpets, and camels'-hair goods constitute the bulk of the exports, commerce being chiefly with India and Bokhara. In 1913 the imports from India were valued at £1,666,000, and the exports to India at £848,000. The imports from Bokhara are stated as 4,000,000 roubles, and the exports at an equal amount. The loosely organized government is headed by an ameer (Habibullah Khan in 1914), who receives an annual subsidy of 1,800,000 rupees from the British-Indian government. Other revenues, the amount of which cannot be determined, are derived mainly from taxes in kind, and their collection is attained with dishonesty and extortion.

In the autumn of 1914 the ameer of Afghanistan was reported to have placed himself at the head of an army for the invasion of India. Such an act of hostility towards the British Empire might mean the end of Afghan independence, should Great Britain issue victoriously from the War of the Nations; but it is quite possible that the report of the ameer's bellicose action was quite unfounded in fact.

AFRICA. See articles on the various African countries; ANTHROPOLOGY; ARCHÆOLOGY; and EXPLORATION.

AFRICAN METHODIST EPISCOPAL CHURCH. See METHODISTS, COLORED.

AGRICULTURAL BANKS. See AGRICULTURAL CREDIT; and BANKS AND BANKING.

AGRICULTURAL CREDIT. The great interest in the provision of facilities for farmers which had been aroused by various factors during the past few years approached the stage of practical action in 1914. Various phases of the problem were considered early in the year at a joint meeting in Chicago of the National Conference on Marketing and Farm Credits, and the Western Economic Society. There resulted a permanent organization to carry on the work throughout the year. On November 23–25, inclusive, at a conference of Progressive State Granges in Washington, the subject of rural credit legislation was thoroughly discussed. The Federal Reserve Board and the banks extended credit to the cotton growers toward the end of the year through the *Cotton Loan Fund.* (See BANKS AND BANKING.) In his annual report in December, Secretary of Agriculture Houston considered further extensions of credit by Government aid unnecessary, believing that the formation of rural credit associations among farmers and privately capitalized agricultural banks should be able to meet all demands not met by the new Federal Reserve System.

American Commission. In 1913 the American Commission of nearly 100 members studied agricultural credit methods in Europe. In addition President Wilson appointed a commission of seven, authorized by Congress and known as the Federal Commission on Rural Credits, to study the same problem. These two commissions coöperated. A report in three parts was submitted to Congress in March. This report analyzed the needs of farmers for both large and small sums for long and short periods. It recommended that long term loans of considerable size with which to purchase farms and equipment be treated separately from short term small loans for running expenses while crops are maturing. It surveyed European plans of providing credit.

Congress. Following these inquiries numerous bills were introduced in Congress. Representative Moss, of Indiana, in January introduced a bill for the establishment of National Land Banks under the supervision of a special bureau of the Treasury Department. These banks, according to the bill, could be either private joint stock or coöperative associations. They would have power to accept and pay interest on deposits, including postal savings; to make loans on farm lands for not more than 35 years up to 50 per cent of the value of improved lands, and 40 per cent of the value of unimproved lands, such loans to be reduced by annual or semi-annual payments, and to be made only to pay off mortgages or purchase land. Each of these banks was expected to contribute to the capital of a Federal bank.

There was introduced on May 12 the Rural Credit Bill by Representative Bulkeley and Senator Hollis. This was in the main the Administration measure designed to carry out a policy forecast in the Federal Reserve Act of 1913. It provided for the creation of local farm loan associations by any five persons; these could be established by the payment of capital stock by outside investors or by a group of borrowers desiring to form such an organization and borrow from it. Above these local associations were to be twelve Federal land banks of $5,000,000 capital each. Each local association was to contribute at least $1,000 to the capital of the Federal land bank. The Federal land banks were to derive their capital from investors, the government, and local associations. The farm loan association would make loans for 30 years in amounts not exceeding 20 times their capital and surplus and based on farm mortgages. Such loans would be on an amortization basis making possible the gradual reduction of the principal from year to year. The Federal land banks would perform the function of transforming the farm mortgages into bonds in denominations of $100 and more and selling these latter to investors. Although designed as the Administration measure, President Wilson finally entered an objection to it because of a section which authorized the Secretary of the Treasury to purchase farm loan bonds up to $50,000,000 in amount. The President disapproved this extension of governmental aid and security.

Other bills dealing with the same matter were the Fletcher bill, the Fletcher-Moss bill, and the Bathrick bill. The Fletcher bills were similar in general principles to the Bulkeley-Hollis bill, except they provided for the formation of National Farm Land banks under the immediate direction of a commissioner in the Treasury Department without the formation of local farm loan societies. The Bathrick bill provided for loans direct from Government to farmers or district farm credit associations at a rate not to exceed 4½ per cent. The Government was to borrow such funds at not over 3½ per cent and distribute them under the direction of the Secretary of Agriculture.

Ohio. The Ohio members of the American Commission previously referred to issued *Report on Rural Credits and Coöperation* (84 pp.). This report dealt not only with agricultural conditions and methods in Europe but gave data regarding investigations by Ohio State departments into the extent of farm loans in that State. It was shown that State and private banks had on Sept. 4, 1913, outstanding farm loans amounting to $25,455,000. Building and loan associations had 7,737 such loans amounting to $15,223,000. The census of 1910 had reported mortgage indebtedness of $63,788,000 on 12,785 out of 44,780 farms operated by owners owning their entire farms. Of farms partly owned 10,217 or 35 per cent were mortgaged with total indebtedness of $15,000,000. If to these sums were added the mortgages of farms operated by managers or by tenants a total of $103,000,000 was secured. This was undoubtedly a minimum since an estimate based on recorded mortgages in 1913 indicated a total mortgage indebtedness on Ohio farms of $175,000,000 to $200,000,000. At the minimum figure banking institutions would provide two-fifths of mortgage loans, the remainder coming from individual lenders, insurance companies, and banks outside of the State. No data were available to indicate the extent of short-time loans on personal or chattel mortgage security. Loans to tenant farmers moreover were shown to be least well provided for.

Texas. Professor L. H. Haney of the University of Texas found as the result of the study of the farm credit conditions in that State that tenant farmers were paying an average of 20 per cent interest; and that the credit system injured diversification of crops to a very marked degree. He pointed out that bad years put many tenant farmers hopelessly in debt. They then financed their farming by mortgaging the next year's crop, seldom receiving more than 50 per cent of the estimated value of such crop. The merchant advancing the loan usually requires that cotton be the main crop. This system destroys the initiative and hopefulness of the farmer; and fastens more securely upon the South the single-crop system with its soil exhaustion. The extraordinary interest rate implying a great scarcity of capital results in inadequate equipment in live stock and machinery. Thus the available labor force cannot be utilized to its greatest efficiency.

Canada. The Province of Saskatchewan appointed in 1913 a Commission to Inquire into the Ways and Means of Establishing Agricultural Credit. It joined with the American Commission already noted in investigating European systems of rural credit. It also made an extensive investigation into mortgages and farm loans in Saskatchewan. It found that during 15 months preceding Aug. 15, 1913, there was an average of 115 mortgage foreclosures and other mortgage proceedings per month in the Province; that interest rates on mortgages were seldom less than 8 per cent and in many cases were 10 per cent and 12 per cent and occasionally reached 15 per cent. While mortgages were almost universally for short terms, they were readily renewable, the farmer thus being periodically threatened with the loss of his farm. The purposes for which loans on mortgages were made included: past debts; machinery; stock, building, and equipment; working capital; more land; and travel. The Commission found that while the banks rendered many services, they made excessive charges and favored the commercial rather than the agricultural interests. It was found that not less than $65,000,000 was due to mortgage companies from Saskatchewan farmers. Other large sums were owed to implement companies and for preëmptions, horses, store credit, lumber, and miscellaneous debts, so that farmers of the Province were paying interest on at least $150,000,000. Thus a reduction in the interest rate by 2 per cent would effect a substantial saving. The Commission held strongly that farm credit should be provided on an amortization plan and under conditions in which service to the farmer rather than profit is the chief aim. The Commission would create a coöperative farm mortgage association with local branches to issue mortgage bonds granted by the government; mortgage loans to be issued to farmers on a 15 to 35 year basis at a rate of interest covering actual cost.

Bibliography. Myron T. Herrick and R. Ingalls, *Rural Credits: Land and Co-operation;* C. L. Stewart, *Analysis of Rural Banking Conditions in Illinois.*

AGRICULTURAL EDUCATION. The passage during the year of the Agricultural Extension Act rounds out and completes the movement for agricultural education inaugurated in 1862 with the passage of the land-grant act for the establishment of agricultural colleges. It provides for a form of extra-mural instruction which has developed out of the work of the agricultural colleges, and in many States already been started by them, and it recognizes these colleges as the agencies in which such work should centre. The object of the new act, named for its authors the Smith-Lever Act, is "to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same;" and in general the work contemplated is defined to consist of "the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstrations, publications, and otherwise."

The appropriations are assigned to the agricultural colleges in the respective States, and the work is to be conducted in coöperation with the United States Department of Agriculture, the latter being charged with the administration of the act. The act carries a permanent appropriation of $480,000 per annum for maintenance, or $10,000 for each State. In addition, $600,000 is provided for the second fiscal year of operation, and thereafter an amount increasing each year by $500,000 over the preceding year, until in seven years it reaches $4,100,000. This with the basic appropriation of $480,000 makes a total of $4,580,000, and continues as a permanent annual appropriation. Unlike the initial appropriation of $480,000, these additional appropriations are to be allotted annually by the Secretary of Agriculture to the several States in the proportion which their rural population bears to the total rural population. They are also conditional upon the provision by the States of an equal sum for maintenance of the work, so that when the act matures a total of $8,680,000 will be available for extension work under its provisions. No part of the appropriation can be used in the purchase, erection, or repair of buildings, the purchase or rental of land, college course teaching, promoting agricultural trains, or other purposes not specifically authorized, and not more than 5 per cent for the printing and distribution of publications.

Extension divisions or departments have been organized at each of the agricultural colleges, and the new work inaugurated. These colleges now embrace three main divisions—research under the experiment station, college instruction, and extension.

During the past decade the number of students taking the full four-year course in agriculture at the land-grant colleges has increased from approximately 2500 to 12,500. Since 1910 the annual number of graduates in agriculture has increased from 708 to 1384, and the number receiving advanced degrees from 74 to 164. The total revenues of the land-grant colleges have practically tripled and those of the experiment stations have more than tripled, the increase being especially notable from sources other than Federal funds. Similarly, the number of men on the staffs of the experiment stations has increased from about 750 to approximately 1600, and the number of these doing no teaching from 375 to 925.

Ten years ago there was scarcely any agricultural extension work performed outside of the work carried on by the farmers' institutes. Today practically all of the land-grant colleges have a definite organization for extension purposes, with 1300 men employed as State, district, and county agents, and as boys' and girls' club workers.

In the New York State College of Agriculture there has been established a third, or summer term, which continues from early June until late September. It is coördinate with the present fall and spring terms. It is open only to students who have completed the required work of the freshmen and sophomore years in agriculture or the substantial equivalent thereof. The facilities of the college are available for graduate study throughout the summer.

An extensive investigation of the Massachusetts Agricultural College has been made by the State Commission on Economy and Efficiency. One outcome of this was its recommendation that the system of annual State appropriations for maintenance be supplanted by appropriations for a five-year period, totaling $1,611,000, or an average of $322,000 per year.

Graduate School of Agriculture. The sixth session of the Graduate School of Agriculture was held at the University of Missouri, June 29 to July 24, Dr. A. C. True of the United States Office of Experiment Stations serving as dean. The instruction offered related especially to genetics, agronomy, horticulture, animal husbandry, immunity and disease resistance in plants and animals, and rural economics and sociology, including farm management.

SECONDARY AGRICULTURAL SCHOOLS. According to the most reliable information, there were in 1913–14 about 103 agricultural high schools in the United States receiving State aid, six privately endowed agricultural high schools, 424 public high schools receiving State aid for agriculture, 563 high schools in which instruction in agriculture is a requisite for State aid to high schools, and 330 high schools in which instruction in agriculture is a requisite for State aid for normal training instruction, or a total of 1426 high schools. There were also 215 normal schools, including county training schools and industrial schools for women, offering courses in agriculture.

The State of Michigan is one of a few States that has made considerable progress in secondary agricultural education without State aid. A recent report from that State shows that 31 high schools offered one or more years of agricultural work during the past year. Each school employed a special instructor in agriculture, nine of whom were employed for 12 months; 1000 boys studied agriculture in the different grades, and 356 young women were also enrolled in certain of the agricultural subjects; approximately 500 of the high school boys and girls worked at home projects during the summer of 1914; the cost of agricultural instruction per school ranged from $175 to $1300, or a total of $20,884.50; 17 schools offered one-week courses for farmers and 16 had a total of 31 boys' and girls' clubs; the expense of equipment ranged from $1.50 to $225 per school, or a total of $1253.

The State of Minnesota may be mentioned as the one State that is foremost in providing State aid for the teaching of agriculture in secondary schools. It is shown that for the year ended July 31, 1914, 119 State high schools received a total State aid of $237,853 for instruction in agriculture; agriculture was taught in 134 high schools to 4053 students, cooking in 165 high schools to 5799 students, and sewing in 179 high schools to 6680 students; the total expenditure for agricultural equipment was $40,558, and for cooking and sewing equipment $55,144.

Progress was made by the United States Office of Experiment Stations in the preparation of literature to be used by teachers giving instruction in agriculture in the rural elementary schools. A definite beginning was also made in the preparation of illustrative material for use in agricultural schools, including charts, photographs, lantern slides, moving picture films, etc.

FOREIGN COUNTRIES. *Chile.* The agricultural normal school at Santiago is being reorganized and its activities devoted entirely to agricultural subjects under rules and regulations to be issued by executive authority. The agricultural schools at Chillán, Concepción, and Cauquenes are also to be reorganized, and $10,950 has been appropriated for each of two agricultural schools to be established at Aconcagua and Rancagua, respectively.

Canada. An act has been passed providing for the establishment of agricultural schools at such places in the Province of New Brunswick as may be decided upon by the lieutenant-governor in council, who is also authorized to purchase such lands and erect such buildings as he may deem necessary for the purpose.

The plan, under which the department of education of the Province of Ontario is coöperating with the department of agriculture to encourage instruction in agriculture and horticulture in continuation and high schools and collegiate institutes, has been worked out in detail. The instruction will be optional, under the supervision of the director of agricultural education, and will be given by teachers of science holding an intermediate certificate in agriculture and horticulture granted upon the satisfactory completion of two five-weeks' summer sessions at the Ontario Agricultural College, or by the district agricultural representatives. A board of trustees that provides and maintains satisfactorily a course in agriculture and horticulture in the lower school of the high school course extending over two years, including pupils' home projects under a certificated teacher, will receive $100 and the teacher $75. To the school board which, in addition to the home projects, provides and maintains experimental and demonstration plats at or in connection with the school for the practical instruction of the pupils, an additional grant not to exceed $25 will be paid, and to the teacher an additional annual grant of $25. When the work is conducted by a county agricultural representative he will be paid the grants specified for the teacher. The two-year middle school course may be taken only in schools where the lower school course is being taken. The same grants will be paid and the same requirements as regards instruction and examinations made as in the lower school course.

Colombia. The government of Cundinamarca has contracted with a proprietor of vineyards at Tocainia to establish an agricultural institute on his property. The Colombian Government has also authorized the employment of four instructors in tropical agriculture and two veterinarians.

Bolivia. The Elidoro Villazon National Agronomic and Veterinary Institute at Cochabamba is now well equipped and furnishes a four-year course of theoretical and practical instruction in agronomy and veterinary science. An agricultural school is being established at Ypacarai, Paraguay, with several instructors educated abroad.

Peru. A three-year theoretical and practical course in agriculture is now being offered in the Peruvian National College at Ica, and a new school is to be established at Puno, the Peruvian port on Lake Titicaca.

AGRICULTURAL EXPERIMENT STATIONS. EXTENSION OF THE WORK. There has been a steady growth of the stations generally throughout the United States. The States have shown an increasing tendency to extend the work of the stations by making appropriations for investigations in special lines. In California a station has been established for the study of problems connected with the growing of citrus fruits and a laboratory costing $25,000 has been erected at Riverside. The new hydraulic laboratory at the Colorado Station has been used for important studies of the devices for measuring water for irrigation. In Idaho, State appropriations aggregating $16,000 were made for investigations in animal husbandry, poultry, orchard irrigation and the control of the alfalfa weevil. The Kentucky Station erected a special building for the breeding and rearing of guinea pigs, rabbits, mice, and other small animals used in its researches. In Missouri, State appropriations amounting to $48,000 were made for work in animal and dairy husbandry, horticulture, farm management, and soil test fields, in addition to $55,000 for general maintenance and new equipment. The New York Cornell Station has a special appropriation for the study of diseases of gladioli and other bulbous plants. The South Dakota Station has $25,000 for the collection and introduction of Siberian alfalfas and the propagation and distribution of hardy varieties of this plant in the semi-arid regions of the State. In West Virginia the station received from the State $17,000 for work in animal husbandry, horticulture and tobacco and $4500 for printing. In Iowa recent legislation gives the station $40,000 for maintenance, $10,000 for veterinary investigation and $19,500 for the purchase and equipment of an experiment farm.

New greenhouses and service buildings, costing about $87,000, have been erected at the Illinois Station. The State appropriations for the Minnesota Station have been increased by $40,000. In Kansas $68,000 was appropriated for the maintenance of the station and substations. The Maine Station had $5000 for animal husbandry investigations and $10,000 for the purchase of an experiment farm in Aroostook Co. Agricultural buildings for the use of the colleges and stations have been erected as follows: In Arizona, $165,000; Massachusetts, $210,000; Washington, $150,000; Wyoming, $100,000; Michigan (dairy building), $50,000; New York, at Cornell University (animal husbandry building), $91,000, and (soils building), $100,000.

Federal and State Stations. Agricultural experiment stations maintained in whole or in part by Federal funds in 1914 existed in every State and Territory, including Alaska, Hawaii, Porto Rico and Guam. There were also stations in the Philippines under the insular government. In 1913 the stations employed 1639 persons in the work of administration and inquiry. The total income of the stations maintained under the Acts of Congress of 1887 and 1906 was $4,387,635, of which $1,440,000 was received from the United States, $1,504,133 from State appropriations, and $1,407,502 from fees, contributions, sale of products, and miscellaneous sources. The value of the additions to station equipment aggregated $731,430, of which $395,137 was for buildings. In addition to this, the Office of Experiment Stations had an appropriation of $431,700, including $30,000 each for Alaska, Hawaii, and Porto Rico; $15,000 for the Guam Station; $16,000 for nutrition investigations; $98,300 for irrigation investigations; $100,000 for drainage investigations; and $15,760 for investigations of farmers' institutes and agricultural schools, together with $28,660 derived from the sale of agricultural products at the insular experiment stations.

In Alabama, Connecticut, Hawaii, Louisiana, Missouri, New Jersey, New York, North Carolina, and Virginia, separate stations were maintained wholly or in part with State funds and numerous substations were also maintained in a number of States. Excluding the substations the total number of stations in the United States is 65, of which 58 receive Federal funds. In 1913 the stations published 624 annual reports, bulletins and circulars, which were supplied to over 1,000,000 addresses on the regular mailing lists. The correspondence with farmers was enormous and constantly increasing.

Office of Experiment Stations. This office continued to maintain close relations with the stations in the several States, conducted an inspection of their work and expenditures under the Hatch and Adams funds, and published summaries of the work of the stations and other similar institutions throughout the world in the *Experiment Station Record*. The advisory functions of the office are increasing constantly with the growth in the amount and variety of the station enterprises.

Recent Experiments. The *South Dakota Station* demonstrated the possibility of growing sugar-beet seed of the highest quality in South Dakota and by selection increased the percentage of sugar in the beet in one strain to 25.4 per cent, and also successfully adapted the tobacco planter to the use of setting out alfalfa plants in rows in order to admit of their cultivation, which is largely practiced in the dry region of the State and elsewhere.

The *Missouri Station* secured data giving a basis for applying the feeding standard more accurately to cows producing milk varying widely in fat content. Results of feeding studies indicated that, under the conditions of the experiment, and estimated on the basis of net profit per steer, a ton of dry matter in the form of corn silage yielded 50.3 per cent greater value than a ton of dry matter in the form of shocked corn.

The *Idaho Station* secured results showing that the amount of acid present in the cream at the time of churning is the principal controlling factor in the deterioration of butter in storage and that this is not due to the action of bacteria, yeasts, or molds developing in the butter subsequent to its manufacture.

The *Wisconsin Station* worked out methods of making Cheddar and brick cheese from pasteurized milk with the results showing higher scores in quality as well as a gain in the yield of the cheese.

Along veterinary lines the *North Dakota Station* established the importance of nonclinical infection carriers as factors in the maintenance of swamp fever infection foci, and demonstrated the tenacity of swamp fever virus in infection carriers.

The *Rhode Island Station*, in further pursuing its fowl cholera studies, demonstrated the transformation of an inherited, acquired immunity in rabbits into a permanent, active immunity, and discovered a culture possessing a protective action against a number of virulent fowl cholera cultures.

The studies of bacillary white diarrhea at the *Connecticut Storrs Station* have proved that the period of great danger of infection from without is the first three days after hatching, or the first four or five days if vitality of the chicks is low. The feeding of sour milk as a means of reducing loss through the disease was well demonstrated.

The etiological factor causing contagious abortion in cows, *Abortus bacillus Bang*, was isolated by the *Kentucky Station* from three herds affected with the disease, and a biological test was devised whereby contagious abortion in cows may be accurately diagnosed. The organism causing this disease in mares was also isolated by the station and identified as different from the micro-organism causing the disease in cows.

In studying the availability of phosphates the *Wisconsin Station* determined that, contrary to the general belief, aluminum and iron phosphates are relatively unavailable to plants. Many of the common field crops made better growth on aluminum phosphate than on calcium phosphate, and better growth on iron phosphate of the ferric form. The results show the inadequacy of chemical solvents in measuring the availability of different phosphates. This station also found that such plants as June grass and red clover contain volatile sulphur compounds, and that with an adequate supply of sulphates in the soil an abundance of sulphates was produced in the plant juice and maximum growth was attained.

The *Iowa Station* demonstrated that frozen soils possess a nitrogen-fixing power which increases with the continuance of the frozen period, being independent of moderate changes in the moisture conditions, but restricted by large decreases in moisture. It is explained that in the fall when the soil gradually cools, its nitrogen-fixing power increases until the soil becomes frozen when it almost ceases, after which a smaller nitrogen-fixing power is established. In studies involving the relation between soil bacteria and the growth of various crops by the *Wisconsin Station*, it was found that when pure cultures of various kinds of soil bacteria were grown in extracts from marsh soil which had previously produced corn, oats, or clover, the bacterial development in all cases was increased, the stimulation being greatest after corn, thus indicating the possibility that the growth of a given crop may favor the multiplication of certain kinds of bacteria affecting the growth of subsequent crops.

Work at the *Minnesota Station* on physiological races and the nature of resistance in plants showed that the resistance offered by wheat to the attacks of *Puccinia graminis* appears to be of the same nature as that offered by a given cereal to an uncongenial biologic form. Resistance further was apparently due not to morphological but to physiological causes and was found to vary somewhat with the metabolism of the host.

Investigations in farm management were pursued by a number of these institutions, and such work at the *Missouri Station* indicated that in the particular field of study about 17 per cent of man labor on the farm went to maintenance, 28 per cent to crop production, and 56 per cent to other production, while horse labor varied from 6 to 21 per cent for maintenance, 51 to 69 per cent for crop production, and 19 to 41 per cent for other production.

In *Alaska* several hundred hybrid strawberry plants fruited for the first time at the *Sitka Station* and one matured its fruit 10 days earlier than any native or cultivated variety. Crossing experiments are being made with wild and cultivated currants and gooseberries, as well as the berries belonging to the genus *Rubus*. At the *Rampart Station* Grimm alfalfa seeded abundantly. The possibility of producing locally grown seed of turnips, radishes, peas, and other vegetables was also demonstrated there. At Kodiak experiments showed the practicability of revegetating the land covered by ash from Mount Katmai and the Galloway cattle have been returned to the reservations on that island. Wherever nitrogen was added to the volcanic ash or the lower soil was mixed with it excellent crops were grown. A plow was devised which will mix the ash and soil.

At the *Hawaii Station* the soil investigations have given results of great practical value. Phosphoric acid was found to be fixed by Hawaiian soils to a greater extent than any other fertilizer constituent, but it continues available for plants. A variety of rice, Bezembo, from Japan, matures fully 10 days earlier than other varieties grown at the station. Cultivating soy beans as a green manure crop in connection with rice has nearly doubled the yield of the latter crop. The Mediterranean fruit fly has been found to attack coffee while the berries are yet on the trees, but earlier picking will give a better flavored coffee with little loss due to the fly. Some recent experiments have indicated that cold storage will destroy the fruit fly in avocados, papayas, figs, etc., if the fruit is kept 10 days or more at 32° F. Coöperative marketing experiments have proved very successful and encouraged the farmers on the islands to produce more vegetables, fruit, poultry, eggs, etc.

In *Porto Rico* the station is conducting a survey of the island to determine which sections are best adapted to fruit growing and in other ways special attention is being given to work in the interests of this rapidly expanding industry. Experiments with mangoes, coffee, coconuts, cacao, and vanilla are being extended. Coffee diseases and insects are being studied. Investigations in agriculture have led to the development of a considerable industry.

In *Guam* experiments in the introduction of improved breeds of horses, cattle, pigs, and chickens have been quite successful.

In *England* a laboratory for research in agricultural entomology has been opened at the University of Manchester. In South *Russia* an experiment station for pomology known as the *Salghir Station* has been established at Simpheropol in the Crimea. At Allahabad, *India*, the American Presbyterian Mission is acquiring land for experimental work in agriculture in connection with the Ewing Christian College. This enterprise will be in charge of an American missionary who has introduced many important improvements in agricultural methods among the native farmers.

AGRICULTURAL LEGISLATION. UNITED STATES. Agricultural measures received considerable attention from Congress and the relatively few State legislatures in session in 1914. The leading enactment was the Smith-Lever Act establishing a national system of agricultural extension work. (See AGRICULTURAL EDUCATION.) Valuable results were also expected from the United States Cotton Futures Act. This measure attempts to minimize speculative manipulation of the market by requiring in sales of cotton on the exchanges for future delivery the use of official grades, written contracts, and a system based on actual commercial values in making settlements, with an appeal to the United States Department of Agriculture in case of disputes. A tax of two cents a pound is levied on all cotton not so sold, and as the very low grades of cotton and pro forma deliveries are prohibited and the Department of Agriculture will determine what are bona fide spot markets, it is expected that market quotations will reflect more accurately the real value of spot cotton of usable quality, and thereby assist both the grower and manufacturer.

The serious financial situation confronting producers of cotton and certain other crops following the outbreak of the European War led to many relief propositions involving Federal and State aid in a variety of forms, but no legislation was completed. In South Carolina a law was passed restricting the planting of cotton to one-third of the acreage in all crops the preceding year. A bill designed to increase the value of warehouse receipts as security for loans by providing an optional system of Federal licensing of warehouses and grading of cotton, grain, and other nonperishable agricultural products passed the Senate August 24, and in considerably modified form the House December 21, but had not been finally adopted at the close of the year.

Although the commissions appointed in 1913 to study European rural credit methods, submitted comprehensive reports, an increasing realization of the complexities of the subject and of the wide differences of opinion as to the most feasible remedies contributed to the postponement of all Federal legislation. New York, however, authorized a system of land banks, consisting of local savings and loan associations conducted on the usual basis, but supplemented by a central State bank located in New York City and owned exclusively by them. This central bank may issue shares to the locals, using the proceeds for loans on real estate, and can also sell bonds secured by long-term mortgages. In Colorado a court decision affirmed the constitutionality of an act providing for the use of nearly $1,000,000 of school funds for long-term farm loans at 6 per cent interest. Virginia modified its incorporation laws to facilitate the formation of bona fide coöperative associations, and Massachusetts amended its credit union law of 1909.

Conservancy districts were authorized in Ohio to reclaim wet lands, provide irrigation, or prevent floods; and drainage districts may now be established in New York. Mississippi, New Jersey, South Carolina, and Virginia amended their drainage code, and the Massachusetts drainage board was empowered to purchase and drain lands for sale at cost plus 4 per cent interest. Lime crushing plants may be operated at the Mississippi State penitentiary, and the lime sold to farmers at cost.

A food and market commission was established in New York and a market division in Hawaii. (See *Marketing and Distribution.*) In Maryland, municipalities were prohibited from charging farmers for licenses to sell their own produce. New Jersey cities were empowered to operate public slaughter houses, the city of Providence, R. I., a public market, and Jamestown, N. Y., a municipal milk plant.

The milk laws of Massachusetts, New Jersey, and Rhode Island were made considerably more stringent. In Virginia the prompt cleansing of milk cans was required, and optional tuberculin testing of dairy stock provided, with State remuneration for diseased animals. South Carolina passed a seed inspection law, and Maryland adopted amendments requiring statements as to purity and germination. New York provided for the registration of agents selling nursery stock, and the recovery of damages for trees which do not prove true to name. South Carolina prohibited misleading claims for proprietary stock feeds, and Virginia the dissemination of the rust disease by cedars. Both of these States amended their fertilizer inspection laws. New Jersey adopted a standard fruit basket and cranberry barrel.

A Federal commission on national aid to vocational education submitted a draft of a proposed bill carrying an ultimate annual Federal expenditure of $3,000,000 for grants to States duplicating their respective allotments for secondary instruction in agriculture, and the matter was pending in Congress. Virginia authorized the use of State school funds for instruction in agriculture and home economics, and Missouri granted State aid to high schools with approved agricultural courses and instructors. Massachusetts towns were empowered to buy land and otherwise support farm demonstration work, and each county not maintaining State-aided vocational schools may grant funds to a corporation organized for the employment of farm advisers. Virginia provided that county farms may be used for demonstration work, and Mississippi that county supervisors may establish departments of home economics under the direction of a county agent.

Other legislation of the year included an act whereby the Secretary of the Interior may reserve in each Federal reclamation project not to exceed 20 acres per township for country parks, public playgrounds, and community centres. Massachusetts gave farmers the long-sought rights to kill deer injuring crops and detain "chicken thieves." Maryland opened, in connection with its board of immigration, an exhibition room for farm products and an agricultural labor employment office.

FOREIGN. Efforts to promote agriculture by governmental aid were by no means restricted to the United States. Portugal, Peru, and Algeria effected a complete reorganization of their agricultural departments. France reorganized its meteorological service, and Greece and Uruguay provided increased facilities for collecting agricultural statistics. Ontario made formal provision for its system of farm advisers. Turkey, Italy, Spain, and Switzerland adopted laws for the reporting of plant diseases and their control by government inspectors. Egypt took steps to keep out cotton pests, and Norway prohibited importations of gooseberry plants and their products. Quebec and Japan excluded all infected plants and the former provided for nursery inspection. Nova Scotia strengthened its plant inspection laws and Manitoba began the suppression of foul brood. Fertilizer inspection laws became effective in Algeria and Tasmania, while Queensland regulated the size and labeling of its packages of export fruit. The stallion registration laws of Manitoba, Ontario, and Nova Scotia were amended, in the first-named by requiring inspection for soundness.

The Slaughter-of-Animals Act of Great Britain gave authority to the Board of Agriculture and Fisheries to restrict the slaughter of animals used for human food. It was announced that no action was regarded as necessary at present, the object being to prevent the depletion of breeding stock in emergencies. The tuberculosis laws were also strengthened. Ontario aided the pure bred stock industry by penalizing owners of bulls running at large.

Widespread interest was again manifested in promoting farmers' coöperative associations, rural credit facilities, and similar enterprises. France extended the powers of its rural credit societies, and Madagascar and Mauritius enacted comprehensive laws in aid of rural coöperative organizations. Nova Scotia, Saskatchewan, and Quebec broadened the scope of bodies of this sort. The acquisition of small holdings by laborers through State loans on an amortization basis was facilitated in Denmark by additional legislation.

A system of agricultural warehouses for the reception of farm produce and the distribution of implements, fertilizers, etc., was inaugurated in Portugal. Rumania provided for more complete government inspection of its grain and other markets. Prussia, Hungary, and Madagascar codified and extended their laws relative to the use of waters in irrigation, drainage, and the like.

AGRICULTURE. In the United States the year 1914 was notable for producing the highest total value of crops and animal products on farms ever recorded in the country's history, estimated at $9,872,936,000. The wheat crop was the largest on record, approximately 891,000,000 bushels. The cotton crop was the second largest ever grown, and the crops of oats, barley, rye, potatoes, tobacco, and hay were unusually large. The corn production was about 10.6 per cent larger than in 1913. The total production of six leading cereals was estimated at approximately 5,000,000,000 bushels, or nearly a half billion bushels in excess of 1913. The apple crop was the greatest ever harvested. For the country as a whole the crop yields per acre were 2.3 per cent better than the average for 10 years.

An official estimate places the Canadian wheat crop at 158,223,000 bushels, or about one and one-half million bushels below last year. Statistics regarding European crops have been difficult to obtain, owing to the war, and are less complete and final than usual at the close of the year. Deficient yields of wheat as compared with 1913 were reported from France, Prussia, Italy, Rumania, Belgium, Denmark, and Switzerland. The aggregate shortage in the world crop of wheat for 1914 as compared with 1913, for all countries heard from, was indicated to be over 386,000,000 bushels, that in Europe alone amounting to 323,000,000 bushels. The shortage in Germany is offset to the extent of about one half by the surplus in rye production.

New South Wales this year had a record area in wheat, estimated at 4,108,615 acres, an increase of nearly 350,000 acres over last year. Of this it was anticipated that 3,556,000 acres would be cut for grain and the remainder used for hay. In Australia it is reported that only 30,000 square miles are being used for wheat, which could be increased by 500,000 square miles, raising the wheat production from about 100,000,000 bushels to 1,000,000,000 bushels.

The Philippine Bureau of Agriculture, in an effort to improve and increase the yield of rice, distributed seeds to over 1000 farmers, including both upland and lowland varieties. The seed distributed was of varieties which for five years had given an average of over 70 bushels an acre. The government is also making an effort to substitute corn for rice as an article of food among the people of the islands, the Bureau of Education being engaged in a campaign of teaching the people how to grow and use this crop. As a result, in the past two years there has been a marked increase in corn production. In 1912 the crop amounted to approximately 8,000,000 bushels, and in 1913 to 15,000,000 bushels, with a value of $12,300,000. The Philippine Bureau of Agriculture has started a campaign for the raising of more food crops, made necessary by the European war and the cutting off of rice importation from the countries affected. In recent years the rise of the copra industry and the better markets for hemp and sugar have led to the production of these crops at the expense of the local food supply. The Bureau of Agriculture is working with the coöperation of the recently formed agricultural societies, 21 in number in as many provinces.

The final forecast for the 1914 jute crop of India is 3,358,737 acres, which has only been exceeded by that in 1907–08, and a production of 10,531,505 bales of 400 pounds each—a record yield and an increase of over a million and a half bales as compared with 1913. The normal average consumption of the world is about 10,000,000 bales, but owing to the war it is estimated that the world requirement will fall short of the supply by about 2,000,000 bales.

CROP PRODUCTION AND REQUIREMENTS. The requirements of wheat for food in the United States during the 1914–15 crop year are estimated at about 525,000,000 bushels, and for seeding at approximately 77,000,000 bushels, making a total of 602,000,000 bushels, and showing a surplus of 290,000,000 bushels over the estimated production. Usually only a small quantity is fed to live stock, and this will be kept down by the price in excess of corn. It is concluded, therefore, that most of the 290,000,000 bushels surplus will be available for exportation. This would exceed the export of any previous year, the largest amount (including flour) being 235,000,000 bushels in 1901. Already the wheat export is making new high records, exceeding that reached at a corresponding period in any previous year.

The United States Department of Agriculture has recently published figures for the per capita wheat consumption of various countries during the past decade. Excluding seed and reducing flour to the wheat equivalent, the data are as follows: Canada 9.5 bushels, Belgium 8.3, France 7.9, Spain 6.1, United Kingdom 6.0, Switzerland 6.0, Australia 5.5, Italy 5.4, United States 5.3, Uruguay 5.3, Argentina 5.2, Bulgaria 5.0, Austria-Hungary 4.3, Netherlands 4.2, Rumania 4.0, Denmark 3.5, Chili 3.4, Germany 3.2, Russia 2.7, Servia 2.5, Sweden 2.5, Egypt 2.5, Portugal 1.8, British India 0.8, Mexico 0.8, and Japan 0.5 bushels. Generally speaking, these figures are thought to be less than 10 per cent in error.

A recent investigation of the proportion of the total crop requirements produced by various countries indicates that England produces 53 per cent of her food requirements, Belgium 57, Germany 88, France 92, Austria-Hungary 98, and Russia 110 per cent. Canada produces 23 per cent more than she consumes and Argentina 48 per cent more. Contrary to popular impression, the United States in recent years has been as large an importer of food stuffs as an exporter, and hence cannot be classed as a surplus producer, considering food products as a whole. In edible grains the production in the United States is 23 per cent more than the amount retained, in meat 6 per cent, and in dairy products 20 per cent; but only 24 per cent of the sugar required is produced at home, practically none of the tea and coffee, and 6 per cent less than is used of fruits and nuts.

The quantity of edible grains exported from Canada equals 129 per cent of the amount retained, of meat 8 per cent, and of dairy products 12 per cent. The country most dependent upon importation from foreign countries is the United Kingdom, which produces only 27 per cent of her food requirement of edible grains, but 53 per cent of her meats, 62 of dairy products, 58 of her poultry, more than 90 of her vegetables, and 21 per cent of her fruits. Germany produces about 82 per cent of the edible grains required (including flour), about 93 per cent of meats, 92 of dairy products, 67 of poultry, 99 of vegetables, 48 of fruits, and exports 77 per cent as much sugar as she consumes. France produces about 93 per cent of her edible grain requirements, 98 per cent of meats, 80 of poultry, 91 of sugar, and slightly more than is consumed of dairy products, vegetables and fruits. Austria-Hungary is almost self-sustaining in food supplies; she is a fairly large exporter of sugar and a large importer of coffee, but in most other food products the imports and exports nearly balance. Russia is a surplus producer of food stuffs, exporting 19 per cent of her production of edible grains; the exports of dairy products equal about 10 per cent of the home requirement, of poultry 19, of vegetables 4, and of sugar 33 per cent.

CONSERVATION OF FOOD SUPPLIES. Measures were early adopted in various European countries after the outbreak of the war to economize the supply of food crops and to encourage planting on a liberal scale. Notably in Germany, the matter has been the subject of various governmental actions. The feeding of wheat and rye to live stock in that country was prohibited, and the attention of farmers was called to various kinds of coarse fodders and leaves for bedding which it was urged should be used for their live stock in place of oats and straw, in order that the latter might be saved for the use of the army. The amount of grain used for distilling was restricted to 60 per cent of the normal amount, and mills were permitted to convert a larger percentage of grain into flour, 10 per cent of rye being allowed as an admixture of wheat flour, and 20 per cent of potato flour added to rye flour. Early in the fall an order was issued in Germany directing that all potatoes be thoroughly dug, leaving no tubers in the ground, and that the tops be dried or ensiled for feed. All tubers of doubtful keeping quality were directed to be dried at once, and the drying establishments were required to operate day and night. Large quantities of potatoes were required to be dried for food, and it was advised that potatoes be mixed with grain flour in making bread. To offset the wheat shortage would require the use of about 100 kilograms of potatoes per capita.

In Great Britain the great importance was impressed upon the farmers "in the national interest" of largely increasing the acreage under wheat during the coming season. A proposal to hold out a financial inducement to that end was considered but not thought justified. An act was passed empowering the Board of Agriculture to regulate and restrict the slaughter of animals used for human food, in order to prevent depletion of the home meat supply and insure the maintenance of a sufficient breeding stock. Under this act it has been directed that the slaughter of immature or breeding stock of every description be avoided, and that where circumstances permit the total head of live stock be increased, particularly animals like pigs which mature quickly. At the same time, the strictest economy and foresight are urged in feeding, using the cheapest efficient forms of food and allowing no waste spaces capable of producing food for animals. The exportation of wheat and of feeding stuffs for animals is generally forbidden by the countries at war.

ECONOMICS OF FARMING. Very many of the largest and most vital questions of farming centre, not merely in the means of improving production, but in the economic phases of the industry. This is seen to apply in determining the desirability of increased production, the type of farming to be followed, and the disposition of the large staples. The cotton crisis in the Southern States has called sharp attention to the errors of too narrow specialization. The Secretary of Agriculture points out in his annual report that too exclusive devotion to a single crop anywhere is unwise for normal times, and brings disaster in times of disturbance; it prevents the full utilization of land and labor, fails to fill the gaps in the work schedule, and furnishes no reserve. "No Southern State," he says, "is giving sufficient attention to the production of foodstuffs, either for human beings or for live stock. A conservative estimate indicates that Texas imports from other States annually more than $50,000,000 worth of wheat, corn, and oats; Georgia more than $24,000,000; South Carolina more than $20,000,000; 12 Southern States import more than $175,000,000 worth of these three commodities and $48,000,000 worth of meats, dairy products, and poultry products. . . . If the farmers in the South had heretofore practiced diversification on a sufficiently large scale, producing their own home supplies, that section would not be in its present hard case."

Similarly, a commission reporting the past year on the grain markets of the Province of Saskatchewan concluded that exclusive grain raising in that country, as practiced by even the best farmers, is not remunerative; and recommended that every possible encouragement be given to bring about great diversity in the products of the farms. The commission finds that it costs the farmers more to have the exportable surplus grain of Western Canada placed on the present ultimate market than the farmers of any other large exporting country have to pay; and it holds that all elevators, terminal, transfer, and for internal storage, should be owned and operated by the Dominion Government, and in addition provision made for the storage of grain on the farms.

There has been much popular discussion of the responsibility of the farmer for high prices, through his failure to make his acres more productive; and it has been assumed that large yields are always profitable, and that the best farmer is the one who raises the most per acre.

The fallacy or half truth of this has been brought out by economic studies of the question, which take account of the present transition stage between the extensive farming of the new world and the intensive methods of the old countries. Production per acre is not the American standard but rather the amount of produce for each person engaged in agriculture, and by this test the American farmer is said to be from two to six times as efficient as most of his competitors. Relatively speaking, extensive farming is still regarded as economically the sound programme in American agriculture, for the country is only just emerging from the pioneer stage in which land had little value and labor was the principal element in the cost of production. Land is now growing more scarce, and hence costly, and virgin conditions are rapidly passing away, so that other elements than labor have begun to enter into the cost of production. As a general rule increased yield means greater cost, not only per acre but per bushel; and the question in intensified agriculture is not how much the farmer can produce per acre but how much he can afford to produce, which in turn depends upon the price of the product. Extreme yields are profitable only with high prices, even with the best farmers; hence the yield per acre cannot be recklessly increased.

Dean Davenport, of the University of Illinois, has called attention to the law of diminishing returns in agriculture, and applied it to show the danger of overcapitalization in attempts to secure abnormally high yields. "We have not yet reached the intensive stage where it will pay either the producer or the consumer to attempt maximum yields on American land," and hence "we are not to step at once and blindly into expensive forms of intensive agriculture." However, present yields are below what the climate and general situation ought to produce, owing to certain adverse conditions which can be easily corrected by the use of lime, fertilizers, better seed, more rational culture, etc. By relatively inexpensive methods belonging to a transition stage, the yield may be increased without seriously raising the cost.

Until recently there have been few data on the cost of production, the economics of different kinds of farming as a business, and the cause of success or failure. Such data are being provided by farm management studies and surveys. These surveys are showing the disadvantages farmers labor under, the small returns they receive for their labor and investment, and some practical means of improvement. They have furnished cumulative evidence that modern machinery, with the use of more horses and fewer men, has made the farm of less than 100 acres an inefficient unit in the Central West. One of the latest of these studies, published during the year, relates to representative areas in the corn belt, Indiana, Illinois, and Iowa (*U. S. Dept. Agr. Bul. 41*). Seven hundred farms were studied, in regions where the soil is rich, with ample rainfall. The average labor income of farm owners was found to be $408 a year, and of tenants $870, in addition to house and the farm products used in the home. The landlords received an average of 3.5 per cent on their investment.

Dr. Warren, of Cornell, as a result of his studies, believes that for general farming the farms as at present laid out are now too small, and that with the proper number of horses to operate machinery and make the labor efficient, 160 to 200 acres are required for efficiency in general farming. This means four horses and usually two men most of the time. He points out that while the average American farmer is making interest on his capital and fair wages for his labor, the interest is not high enough to attract any large amount of money from the cities and the wages are not high enough to cause any large number of men to move from the city to the country; but with the broader outlook the prospects are keeping far more boys on the farms.

From an investigation of wheat production on a large scale in Argentina, in the southern part of the Province of Buenos Aires, the statistical department of the Ministry of Agriculture finds the cost to amount to 66 cents a bushel, including the rent of land and interest on investment. The wheat sold for 80 cents a bushel.

MARKETING AND DISTRIBUTION. The work of the Department of Agriculture in this field, started last year, has been greatly expanded and extended. Congress has increased the appropriation for the purpose from $50,000 to $200,000. The studies already conducted show a lack of system and economy in getting products from the producer to the consumer. For example, hogs raised in Illinois and sold in Indianapolis were found to be slaughtered at Boston, and a part of the cured bacon shipped to Los Angeles; while Michigan dressed veal was shipped by express to commission houses in Chicago and then returned to the identical shipping points from which it came for local retail consumption.

Coöperative selling has received special attention and records have been obtained of more than 8500 marketing associations, about 2700 coöperative and farmers' elevators, 2500 coöperative and farmers' creameries, and more than 1000 cooperative fruit and produce associations. Over a billion dollars' worth of agricultural products are reported to be marketed annually in the United States by coöperative and farmers' associations. The establishment of standards or uniform methods of grading for agricultural products protects the farmer from injustice, affords incentive to him to improve the quality, and insures the consumer in securing the exact commodity for which he pays a specific price. A few years ago the Department proposed standard grades for cotton, which are being widely adopted, and during the past year Congress enacted a Cotton Futures Act (see AGRICULTURAL LEGISLATION), which stipulates that future contracts must be based on these standards. Grades for commercial corn were promulgated during the year, and work is in progress in fixing commercial grades of grains, especially wheat.

The official grading of Manila hemp and other fibre products in the Philippines has been provided for by a law passed by the insular legislature, effective Jan. 1, 1915. The grading of these fibres is to be done only in establishments licensed by the director of agriculture. Inspection of the grading and an accompanying certificate are provided for. It has been recognized that some such protection of the hemp producing interests and the good name of Philippine hemp and other fibres was necessary.

A committee of wool growers, which met in conference at Washington during the year, presented a report in which it called attention to the absence in the United States of any generally accepted standards for the determination of the various grades of wool. This makes it impossible for the wool grower to know the grade of wool he is producing or its value in the market. The preparation of wool standards by the Department of Agriculture was strongly urged.

A new marketing bureau has been established in New York State, to find a profitable market for farm products of the State and devise an economic system of distribution. The fact that New York City is not only a great consumer but a great distributing centre leads to the pouring into that city of immense quantities of food, which gives great opportunity for fixing prices believed to be unwarranted by the law of supply and demand. The building up of local markets throughout the State, so that home grown products may be delivered directly to their final destination, is one of the remedies contemplated. While similar bureaus exist in several other States, notably Wisconsin and Minnesota, the New York bureau is organized on a broader and more effective basis.

The parcel post has served to bring producer and consumer closer together by favoring direct buying and selling; and the Post Office Department has used its efforts to popularize such dealing, through instruction in packing, exhibits at agricultural fairs, and the publication of lists of farmers prepared to supply various products. The volume of this business has been enormously increased during the year. The standardizing of products has been found one of the essential things in parcel post marketing.

RURAL CREDIT. The United States and American commissions on coöperation and rural credit, which spent several months in Europe in 1913 studying coöperative and land mortgage banks, rural credit unions, and similar organizations, presented the results of these studies for publication. The material collected by the American commission was issued as a Senate document of over 900 pages, entitled "Agricultural Coöperation and Rural Credit in Europe" (*U. S. Senate, 63d Cong., 1st Sess., Doc. 214*). The United States commission prepared a careful analysis of its findings, with modifications necessary to meet American conditions. The report dealt with land mortgage or long term credit, and personal or short term credit, and was published in a document entitled "Agricultural Credit" (*U. S. Senate, 63d Cong., 2d Sess., Doc. 380*). The commission also framed a bill to provide for the establishment, operation, and supervision of a national farm land bank system, which was introduced in the Senate. Various other measures have been advanced, but none of these has passed Congress. The National Grange has been active in urging legislation, and in the fall took steps to organize a rural credit league for that purpose.

Provision has been made for the organization of a State land bank in New York, under a new State law. (See AGRICULTURAL LEGISLATION.) In the Philippines, arrangements have been made whereby the government will deposit with the Bank of the Philippine Islands $1,000,000 to be loaned to farmers in all parts of the islands at not more than 8 per cent interest. It is hoped that this will serve to bring down the prevailing rate of interest. A coöperative farm mortgage association act was recently passed in Saskatchewan, enabling farmers to obtain loans at low rates by giving a government guaranty to bonds or debentures issued by an association of farmers, so that these bonds may be placed in the money markets of the world. An added advantage is the opportunity of repaying a loan at any time under easy conditions.

AGRICULTURAL EXTENSION. A matter of vast importance was the passage by the U. S. Congress of an act providing for the instruction and aid of farmers through field demonstrations, advice, personal contact, the diffusion of information, etc. (See AGRICULTURAL EDUCATION.) This measure is one of the most striking educational measures ever adopted by any government. It is an attempt to carry to the men and women working at their daily tasks on the farm the teachings of better agriculture and homemaking, and to extend leadership to them and to their organizations. Various forms of extension work have been carried on by the agricultural colleges in several of the States, and the Department of Agriculture has for several years been conducting demonstration work with farmers, frequently in coöperation with the agricultural colleges. As developed, this demonstration work has taken the form of providing county agricultural agents, usually with the coöperation of the county, who spend their time out among the farmers, supervising demonstration trials on their lands, holding meetings, giving personal advice, promoting organization and coöperation, and otherwise stimulating the agriculture of the county. The range of service of these county agents is very wide, including the introduction of better breeding animals, testing of cattle for tuberculosis, vaccination of hogs against cholera, development of local supplies of lime, testing seeds, inducing farmers to try new crops, organization of clubs, holding short courses, establishment of reading courses, introduction of agriculture in the local rural schools, directing boys to the agricultural college, and many other kinds of assistance.

For the past year the Department had available considerably over a million dollars for this purpose, and this sum was generously supplemented by State, county, and local contributions. The new extension act is coöperative, and under it the Department will join hands with the States in conducting this work, centring it in each State at the agricultural college. The ultimate aim is an agricultural agent in every county, aided by experts from the agricultural colleges and special officers for organizing and conducting boys' and girls' clubs, etc. The work has met with great popularity and success, and promises to be a great power for the development of the industry.

LAND, AGRICULTURAL AND WASTE. Considerable attention has been given of late to the area of waste or uncultivated land in various countries, as indicating the opportunity for agricultural development. The presidential address of Mr. A. D. Hall before the agricultural section of the British Association for the Advancement of Science, at its 1914 meeting in Australia, dealt specifically with this subject. He made the surprising statement that within 50 miles of London blocks of a thousand acres of waste land may be found, while Belgium and Holland have large districts that are little more than desert. Germany possesses something approaching ten million acres of uncultivated land, and a government department has been created to reclaim and colonize it. Mr. Hall outlined many of the methods which modern science has developed for improving such land. See SOILS.

Only 27 per cent of the tillable land of continental United States is actually under cultivation, according to estimates published during the year by the Department of Agriculture. Of the total area of continental United States, 60 per cent, or 1,140,000,000 acres, is estimated to be tillable, i.e. capable of being brought under the plow. This includes areas which may in future be subdued by clearing, drainage, irrigation, etc. An additional 19 per cent, or 361,000,000 acres, is considered valuable for pasturage and fruits, although nontillable. This leaves only 21 per cent, or 399,000,000 acres, of no use to agriculture, present or future. According to the last census, the land area in crops was 311,000,000 acres, equivalent to about 27 per cent of the estimated potential tillable area of the nation, excluding foreign possessions. In other words, for every 100 acres now tillable, about 375 acres may be tilled when the country is fully developed. The undeveloped areas lie mostly in certain Western States, the largest amount in the Eastern States being in Florida. Naturally the land most easily brought into a state of cultivation, as in the great Mississippi Valley, was the first to be taken up; extension of tilled areas will be at greater expense for improvement.

In Belgium a special commission on the cultivation of waste land reported early in 1914, estimating that there are more than a quarter of a million acres which might be brought under cultivation, exclusive of land which might be rendered more productive by improvement, especially by drainage. Drainage is advocated for reclaiming waste land, with governmental aid and encouragement. Data collected for the new land valuation in France and published during the year show that 65.28 per cent of the entire land area, exclusive of that occupied by buildings, is under cultivation or in pasture, 19 per cent in forest, alder, willow, and similar plantations, and less than 15 per cent in heath, swamp, and other waste land. The latter, however, aggregates nearly 18,000,000 acres. The arable land increased from 1851 to 1879 by nearly a million acres, after which it decreased so that it is now 2½ million acres less than in 1851, although the area in meadows and pastures increased nearly 5,000,000 acres during that time. Both capital value and rental of land increased considerably from 1851 to 1879, after which they sank to nearly the same level as in 1851 (or about 33 per cent), attributed not to a decrease of the gross returns, but to the net returns from agricultural produce.

Extensive and far-reaching land reforms are in progress in Russia under a law promulgated in 1906. The work has only developed on an extensive scale in the last few years, and is connected in its origin with the law of 1861 abolishing serfdom, adding to the personal emancipation of that law the liberation of land. One portion of the work has to do with the readjustment and redistribution of lands owned or occupied by peasants, in order to unite the scattered holdings of individuals, or their equivalent, in small farms of a single piece. Some 11,000 persons are directly engaged in this enterprise, which is the most extensive land readjustment ever undertaken.

Another feature concerns itself with providing additional land for peasants, who in general are insufficiently supplied. The latter has been conducted in close collaboration with the peasants' land bank, which not only makes long-time loans to purchasers, but is authorized to purchase landed estates by the issue of bonds, for subdivision and resale to peasants, and has had placed at its disposal large areas of crown land for the same purpose. The disposal of the enormous quantity of land which came into the bank's possession has involved the organization of schemes of home colonization, the moving of peasants to new sections where land is more abundant, and other measures. In spite of the difficulties of such a large undertaking, the principal part of the land reserve of the bank has already passed into the hands of peasants, especially small farmers most in need of it.

A report issued by the Argentine Ministry of Agriculture shows an extensive changing hands of land. Excluding the land which cannot be sold, the sales during the past decade equal more than 50 per cent of all the Argentine territory.

The last Canadian census showed that out of a total of 710,681 farms, 186,988 were under 50 acres in size, 162,537 were between 50 and 100 acres, 228,236 were between 100 and 200 acres, and 132,920 were over 200 acres. The Board of Agriculture has published a detailed classification of agricultural holdings in England and Wales, according to size. About one-third of the agricultural area of the country is farmed in holdings of from 50 to 150 acres, rather more than half in holdings of over 150 acres, and about one-fourth in holdings of over 300 acres. Nearly one-half the total number of holdings are from 1 to 20 acres, but in area they represent only 6 per cent of the whole. From 1895 to 1913 the total cultivated area declined by over a half million acres, largely at the expense of the largest holdings.

Up to the close of 1913, 182,022 acres of land had been acquired under the British Small Holdings Act, and land had been provided in 6 years for 17,000 applicants. This, however, does not begin to meet the demand, for 43,245 individuals and 89 associations have made application in that time for small holdings which would aggregate 723,497 acres. Less than 2 per cent of the applicants desire to purchase holdings. A new small holdings law was passed in Denmark during 1914, which modifies the law in force since 1899. It aims to facilitate by means of government loans the acquisition of small holdings by farm laborers and similar persons in the country districts.

A successful experiment in reclamation has been made in Egypt on an 800-acre tract of waste land so badly impregnated with alkali that it had grown nothing in years. In 1912 it was drained and irrigated at a cost of $50 an acre. In 1913 it was flooded to wash out the alkali and a crop of rice was grown. The past year a considerable proportion was successfully used for cotton growing, producing a good crop. It is stated that there are a million and a half acres of similar waste land awaiting development in the Nile delta.

The National Forward-to-the-Land League has been planning a meeting in New York early in January, 1915, with the support of the Department of Labor, the U. S. Reclamation Service, and other government agencies, as well as public-spirited men. It aims at settling on the now unutilized land adapted to agriculture the needy from the cities and such desirable immigrants as may come to this country after the war. Several of the States, notably Georgia and California, have set organized effort on foot to attract Belgian settlers. The State-wide organization in Georgia announces that it will provide farm lands practically rent free for two years, and an effort will also be made to furnish transportation and farming equipment.

MOVEMENT OF FARMERS. An analysis of the data collected by the last U. S. Census from nearly 6,000,000 farm operators shows that approximately 52 per cent had occupied their farms less than 5 years, while more than 1,000,000 farmers, or 1/6 of the entire number, had been in their present location less than 1 year. Only 8.63 per cent of "owners, free," in the United States are reported as having occupied their farms for a year or less, while 52.27 per cent of "share tenants" were in the one-year class, and only 6 per cent of the latter had a tenancy of 10 years or over.

FARM WOMEN. To ascertain the specific needs of farm women for assistance, a letter of inquiry was addressed last year by the U. S. Department of Agriculture to the housewives of 55,000 progressive farmers in all the counties of the United States. No questions were asked, but the women were left to discuss any needs they felt. The replies have now been digested and are being summarized in a series of reports published by the Department, together with references to what the government has done in the various lines. These reports deal with the social, educational, domestic, and economic needs of farm women.

The Minister of Agriculture of France has authorized the directors of the departmental agricultural services to organize farm women's clubs in as many communities as possible, for the dissemination of information in home economics and agriculture. The clubs of each department are to be federated, and these departmental federations combined into a national federation, to be administered by a central committee at the seat of the Ministry of Agriculture. A national union of women's agricultural associations in Prussia was formed in Berlin in February, 1914. The object is the creation of a centre for the work of the provincial unions, especially in relation to the teaching of domestic science, increasing the productivity of the rural domestic industries by organizing the sale of fresh products in towns, the promotion of fruit growing, market gardening, bee and poultry keeping, and the control of immigration from the country.

RADIO-ACTIVITY AND PLANT GROWTH. The effect of radio-active material on plant growth has lately attracted attention and study. Stoklasa and Zdobnicky found that in moderate concentration radio-active emanations favorably influenced the development of grains and legumes, and their total production. Very heavy concentrations, however, checked development and appeared to favor the formation of toxic substances. Similarly, Petit in France found a striking acceleration of growth in rye grass, wheat, and especially corn. In the United States, Dr. H. H. Rusby, of Columbia University College of Pharmacy, reported experiments with the finely powdered residue remaining after the extraction of radium. These experiments were conducted in greenhouses and fields, on a larger scale than most of the previous experiments. They showed that in the case of most crops the yields were increased by the addition of the radio-active material, the amount differing with different crops. The beneficial effects continued from one crop to another. There was no indication that radium serves as a plant food, for the necessity for fertilizer was but little decreased. Experiments in England with similar material gave good results with cereals, and especially with root crops.

OFFICIAL AND PERSONAL. Hon. Carl Vrooman was appointed Assistant Secretary of Agriculture to succeed Dr. B. T. Galloway, who retired during the summer to become Director of the New York State College of Agriculture and Experiment Station.

Dr. Moises S. Bertoni, an experienced agronomist and botanist, and director of the agricultural station at Asunción, Paraguay, has been appointed chief of the Bureau of Agriculture in that country.

A separate Ministry of Agriculture has been provided in the Union of South Africa, the first appointee being Hon. H. C. von Heerden.

The trustees of the estate of the late H. B. Noble, of Douglas, Isle of Man, have decided to devote $100,000 to the fostering of agriculture in that island. It is planned to establish a board of agriculture, additional funds to be contributed by the island.

The legislative assembly in the Bahamas has provided for an agricultural board, which has been appointed by the Governor. Attention is being given to the improvement of breeding stock, and the establishment of a government agricultural loan bank is being advocated.

The Russian budget for 1913 contains an estimated expenditure for agricultural purposes of £16,638,600, an increase of £2,335,500 over 1913. The largest item, £5,300,000, is for land organization and reallotment, and assistance to peasants in districts where this work is in progress. There is an allotment of £1,178,700 for drainage, irrigation, and peat cutting, and the allotments for agricultural education and for horse breeding are largely increased.

The Swedish budget for 1914 carried a total of £592,000 for agriculture, an increase of £22,000, mainly for veterinary education and improved roads.

An association of the chambers of commerce and agriculture in the Republic of Mexico has been provided, the aim being to give uniform direction to the agriculture and commerce of the country.

Interest of the railroads in improving agriculture has extended to Spain, where one road has provided its stations with small agricultural museums, supplied with various kinds of useful information; and demonstration fields have been established near many of the railway stations by the central experiment station service of Madrid, with lectures on the use of fertilizers.

Dr. William Saunders, a notable pioneer in the field of Canadian agricultural investigation, and the originator and for many years director of the system of Canadian Experimental Farms, died September 13. He was born in England in 1836, and came to Canada at an early age. His special field of work was horticulture and economic entomology, and he did notable work in

"WORLD" CROPS OF WHEAT, RYE, OATS, BARLEY, AND MAIZE, 1913 AND 1914. (IN BUSHELS)

Countries	*Wheat*		*Rye*		*Oats*		*Barley*		*Maize*	
	1914	*1913*	*1914*	*1913*	*1914*	*1913*	*1914*	*1913*	*1914*	*1913*
United States	891,017,000	763,380,000	42,779,000	41,381,000	1,141,060,000	1,121,768,000	194,953,000	178,189,000	2,672,804,000	2,446,998,000
Canada	159,660,000	231,717,000	2,020,000	2,300,000	327,782,000	404,669,000	37,014,000	48,319,000	....	16,773,000
Argentina	113,904,000	198,414,000	....	....	....	115,879,000	....	....	....	196,642,000
Chile	21,000,000	21,000,000	....	....	....	4,000,000	....	....	....	1,200,000
Uruguay	5,460,000	5,461,000	....	....	....	2,000,000	....	....	....	4,000,000
Austria	55,613,000	60,123,000	....	109,099,000	....	160,091,000	....	75,923,000	....	18,280,000
Hungary, Croatia, Slavonia	133,000,000	168,247,000	48,000,000	54,809,000	93,540,000	102,797,000	67,100,000	78,801,000	....	218,299,000
Belgium	13,973,000	15,042,000	23,000,000	21,885,000	49,750,000	39,000,000	4,159,000	4,142,000	....	....
Bulgaria	46,000,000	45,000,000	10,000,000	9,000,000	12,000,000	12,000,000	16,065,000	10,000,000	23,490,000	30,000,000
Denmark	4,877,000	4,463,000	19,000,000	18,736,000	46,450,000	43,800,000	22,830,000	23,000,000	....	....
France	295,000,000	321,571,000	....	52,677,000	....	322,181,000	....	48,370,000	....	22,000,000
Germany	160,000,000	171,075,000	433,055,000	481,169,000	609,000,000	669,281,000	158,232,000	188,709,000	....	....
Greece	7,540,000	7,000,000	....	....	....	....	....	5,060,000	....	4,700,000
Italy	169,442,000	214,405,000	5,000,000	5,589,000	26,950,000	43,469,000	7,040,000	10,808,000	102,600,000	108,388,000
Netherlands	5,413,000	4,773,000	14,000,000	15,265,000	18,900,000	20,000,000	3,394,000	3,296,000	....	....
Norway	325,000	325,000	....	973,000	....	11,784,000	....	3,202,000	....	....
Portugal	6,180,000	5,500,000	....	3,100,000	....	10,080,000	....	....	....	15,000,000
Rumania	45,000,000	83,286,000	2,258,000	3,711,000	22,485,000	35,138,000	23,450,000	27,339,000	111,850,000	118,104,000
Russia, Europe Russia, Asia	781,000,000	962,587,000	967,000,000	1,002,468,000	970,000,000	1,169,490,000	565,000,000	574,118,000	72,600,000	72,870,000
Servia	9,090,000	8,524,000	....	1,378,000	....	6,889,000	....	3,445,000	....	23,621,000
Spain	120,313,000	112,401,000	29,000,000	27,916,000	30,650,000	25,338,000	73,650,000	68,772,000	28,740,000	25,140,000
Sweden	6,896,000	7,800,000	24,000,000	22,000,000	58,800,000	86,000,000	13,050,000	17,000,000	....	....
Switzerland	3,480,000	3,500,000	1,741,000	1,780,000	4,757,000	4,655,000	534,000	451,000	104,000	120,000
Turkey, Europe Turkey, Asia	58,000,000	58,000,000	....	3,800,000	....	18,900,000	....	119,600,000	....	30,000,000
United Kingdom	64,300,000	58,436,000	....	1,750,000	193,200,000	181,126,000	66,140,000	67,727,000	....	....
British India	313,040,000	360,488,000	....	....	....	....	....	105,000,000	....	128,000,000
Japan	23,842,000	27,140,000	....	....	....	....	102,700,000	101,119,000	3,760,000	3,610,000
Algeria	25,425,000	36,448,000	....	....	18,480,000	17,978,000	18,011,000	50,081,000	....	394,000
Egypt	30,800,000	30,900,000	....	....	....	....	....	10,120,000	....	57,500,000
Tunis	3,853,000	5,589,000	....	....	690,000	4,184,000	3,200,000	6,400,000	....	....
Australasia	107,052,000	100,754,000	....	200,000	....	30,638,000	....	4,312,000	....	9,200,000

cereal breeding. In 1882 he published *Insects Injurious to Fruit*, a book which was widely used as a text in American agricultural colleges.

Dr. Francis H. Storer, one of the few remaining pioneers in agricultural chemistry in the United States, died July 30. His agricultural work, beginning in 1871, was carried on at Bussey Institution of Harvard University, of which he was for many years dean. He was the author of a standard treatise entitled *Agriculture in Some of Its Relations with Chemistry*, which first appeared in 1887, and ran through seven editions, being twice revised. He retired in 1907.

Sir Walter Gilbey of England, noted horse breeder, founder of the Shire Horse Society, and active in the establishment of the Hackney Horse Society, died at Elsenham Hall, Essex, November 12, at the age of 83 years.

Mr. F. W. Taylor, director of agriculture in the Philippine Islands, has been succeeded by Mr. H. T. Edwards, for many years connected with the Bureau of Agriculture.

The National Geographic Society awarded a medal in honor of the late Prof. F. H. King, of the University of Wisconsin, for his well-known investigations on Chinese agriculture.

CONGRESSES AND ASSOCIATIONS. The fifth International Congress of Rice Culture met at Valencia, Spain, May 10–24. It was divided into eight sections, dealing with such topics as rice varieties and their improvement, manures, culture, machinery, rice diseases, the rice trade, coöperation, and the relations of rice growing and malaria.

The German Agricultural Society held its 1914 exposition at Hanover in June. Coincident with it, the 150th jubilee of the Royal Agricultural Society of Hanover was celebrated. This is one of the oldest and most notable agricultural societies in the German Empire, having been founded in Celle in 1764, moved to Hanover in 1878, and since 1899 united with the Royal Chamber of Commerce for the Province of Hanover. A large volume was issued in commemoration of the jubilee.

The Australian meeting of the section of agriculture of the British Association for the Advancement of Science, held during the summer of 1914, was of unusual interest. The sessions were devoted to the subjects of irrigation, dry farming, animal breeding, and milk supply, selected for their local importance.

A section of agriculture was established in the American Association for the Advancement of Science, Dr. L. H. Bailey, of New York, being elected its first vice-president. The new section was inaugurated at the Philadelphia meeting of the association at the close of the year.

A conference of persons interested in the wool industry met in Washington in January, on call of the Secretary of Agriculture. The needs of the sheep and wool industry and plans for placing it on a more stable basis were considered.

A gathering of much interest was the Conference on Country Life Development, at Louisville, Ky., April 7–10, the general expenses of which were defrayed by the Southern Education Board. The main object was to devise ways and means to organize and build up country life in the South, and the sessions were widely attended.

The first International Phytopathological Conference convened at Rome, February 24 to March 5, under the auspices of the International Institute of Agriculture. Fifty delegates were present, representing 35 countries. The chief purpose was to secure measures in each country to prevent the dissemination of diseases and insects affecting plants, especially the organization of an effective system of nursery inspection.

The fifth annual Corn Exposition was held at Dallas, Texas, February 10–24; and the ninth International Dry Farming Congress at Wichita, Kan., in October.

The secretary of the Patrons of Husbandry announced that 518 local granges were added to the roll during the year. Of these 390 were new, and 28 were reorganized from the remnants of previous orders. The spread of the order into the far West is a notable feature of the steady growth.

AGRICULTURE, UNITED STATES DEPARTMENT OF. See UNITED STATES DEPARTMENT OF AGRICULTURE.

AIRSHIPS. See AËRONAUTICS.

AISNE, BATTLE OF THE. See WAR OF THE NATIONS.

ALABAMA. POPULATION. The estimated population of the State on July 1, 1914, was 2,269,945. The population in 1910 was 2,138,093.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. Bu.*	*Value*
Corn	1914	3,264,000	55,488,000	$44,390,000
	1913	3,200,000	55,360,000	49,270,000
Wheat ..	1914	31,000	403,000	503,000
	1913	32,000	374,000	430,000
Oats	1914	390,000	8,580,000	5,920,000
	1913	325,000	6,662,000	4,597,000
Rye	1914	2,000	26,000	29,000
	1913	1,000	11,000	15,000
Rice	1914	200	6,000	4,000
	1913	200	4,000	2,000
Potatoes.	1914	18,000	1,422,000	1,436,000
	1913	18,000	1,512,000	1,588,000
Hay	1914	220,000	*a* 288,000	3,974,000
	1913	210,000	286,000	4,061,000
Tobacco..	1914	200	*b* 140,000	39,000
	1913	300	210,000	52,000
Cotton ..	1914	3,875,000	*c* 1,690,000	54,147
	1913	3,760,000	1,495,000	90,829

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

MINERAL PRODUCTION. In 1913 Alabama ranked eighteenth among all the States in the value of its mineral products, and second among the States south of Mason and Dixon's line and Ohio River. The iron ore produced in 1913 was 5,333,218 long tons, valued at $6,648,569, compared with 4,776,545 long tons, valued at $5,734,371, in 1912. Nearly four-fifths of the total value of mineral products was contributed by iron. The iron making industry is centred in Birmingham and vicinity. Large quantities of pig iron are manufactured and the marketed production of pig iron in 1913 was 1,924,762 long tons, valued at $23,242,374, a slight decrease in quantity from 1912, but an increase in value of nearly $2,000,000. The value of the pig iron is not included in the total value of the mineral products given below. The coke production in 1913 was 3,323,664 short tons, valued at $9,627,170, compared with 2,975,489 tons, valued at $8,098,412 in 1912. The increase in the production of iron ore and in the manufacture of coke with the decreased sales of pig iron, indicate that some of the ore and of the coke was sent to furnaces outside the State. There were produced in 1913, 17,678,522 short tons of coal, valued at $23,083,724, compared with 16,100,600 tons, valued at $20,829,252 in 1912. The principal coal-producing counties are Jefferson, Walker, Bibb, and Tuscaloosa. The coal production for 1914, according to estimates of the United States Geological Survey, was between 12,500,000 and 15,000,000 short tons. The markets for Alabama coal were affected by the low price of petroleum in the Southwestern States; by increased water-power developments; by the competition of coal from Kentucky and Illinois in the markets of Louisiana and Mississippi, which are normally supplied by Alabama; and by other causes. The clay-working industries in 1913 yielded products valued at $2,091,581, compared with a value of $1,935,179 in 1912. The principal part of this was from the manufacture of common brick. The quarry products, the larger part of which is limestone, were valued in 1913 at $1,285,944, an increase of more than 50 per cent from the value of the product of 1912. Other mineral products are graphite, mineral waters, and silver. The total value of the mineral production in 1913, exclusive of pig iron, was $34,660,545, compared with $30,641,983 in 1912. Approximately two-thirds of this was represented by the output of the coal mines.

EDUCATION. The total number of school children in the State in 1914 was 774,976, of whom 432,551 were white, and 342,425 colored. Of the white children, 330,057 were literate and 51,184 illiterate, while among the colored children the ratio was 42,187 literate to 109,975 illiterate. The total enrollment in 1913–14 in the elementary and grammar school grades was 451,850, of whom 305,248 were white and 146,602 were colored. In the high school grades, exclusive of county high schools, there were enrolled 15,094, of whom 1210 were colored. The average daily attendance in the elementary and grammar schools was 276,647, of whom 185,472 were white, and 91,175 were colored. The total number of schools was 6753, there being 4727 for white children, and 2026 for colored, in which were employed 10,038 teachers, of whom 7522 were white, and 2516 colored. The total number of school houses was 6689, with a value of $7,675,386, the schools for colored children numbering 1941 with a value of $666,850. The average yearly salary of white male teachers was $445, and of colored male teachers $169, while the average for female teachers was $369 for white, and $153 for colored. The total disbursements for educational purposes in 1914 amounted to $4,446,076.

FINANCE. The receipts for the fiscal year ending Sept. 30, 1914, amounted to $6,607,001. The disbursements for the same period amounted to $6,575,969. At the beginning of the fiscal year there was in the treasury a balance of $99,267, and at the end $130,299. The bonded debt of the State at the end of the fiscal year 1914 was $9,057,000. It consisted of bonds and special debt obligations to public trust funds. The per capita debt was reduced from $9.80 in 1880 to $5.65 in 1912.

CHARITIES AND CORRECTIONS. The institutions under the control of the State include the insane hospitals at Tuscaloosa and Mt. Vernon, the Confederate Soldiers' Home at Mountain Creek, Alabama Industrial School for White Boys at East Lake, Industrial School for White Girls, State schools for the Deaf and Blind at Lineville, Alabama Home for Refuge, Reform School for Juvenile Negro Law Breakers, and School for the Negro Deaf and Blind. The charitable and correctional institutions are not under the direct supervision of any State board.

POLITICS AND GOVERNMENT. There was no meeting of the State Legislature in 1914, as the sessions are quadrennial and the last was held in 1911. The campaign for the election of a United States Senator to succeed Joseph F. Johnston, who died in 1913, was begun. In October of that year, Oscar W. Underwood, the Democratic leader of the House of Representatives, announced himself a candidate for the nomination. Richmond P. Hobson had previous to this time offered himself as a candidate, begun a campaign, and in the closing months of 1913 spent the greater part of his time in active canvass throughout the State. He also made several speeches in Congress in which he attacked Mr. Underwood, charging him with being a tool of Wall Street, and in sympathy with saloon interests, and also declaring that Secretary Bryan was opposed to Mr. Underwood. The latter denied the truth of these charges and declared that he and Secretary Bryan were on the friendliest terms. In contrast with his opponent Mr. Underwood did not make an active campaign for the nomination. His only important address in the State was made on April 5, the day prior to the holding of the primary elections. The election resulted in the nomination of Mr. Underwood by over 20,000 votes. As his term did not begin until March 4, 1915, it was necessary also to elect a Senator to fill out the term until that date, in which contest Frank S. White, of Birmingham, defeated Ray Rushton, of Montgomery.

For the nomination for Governor, B. B. Comer, former Governor of the State, and Charles Henderson, State railroad commissioner, were the leading contestants, and after a close contest Mr. Henderson received the requisite number of votes for nomination.

In the election held on November 3, Mr. Underwood received 63,389 votes, and his Republican opponent, 12,320 votes. A full Democratic State ticket was elected as well as a solid Democratic delegation to Congress. Special efforts were made in the Seventh District to defeat Congressman Burnett, but he was successful over both Republican and Progressive candidates. The Republican membership in the State Legislature was reduced. George Huddleston, an attorney of Birmingham, was elected member of the national House of Representatives to succeed Mr. Underwood.

In May Henry D. Clayton, chairman of the Judiciary Committee of the House of Representatives, was appointed by President Wilson United States Judge for the middle and northern districts of Alabama. He assumed his duties on May 25, succeeding Judge Thomas G. Jones, deceased.

STATE OFFICERS, 1915. Governor, Charles Henderson; Lieutenant-Governor, Thomas E. Kilby; Secretary of State, John Purifoy; Auditor, M. C. Allgood; Attorney-General, W. L. Martin; Adjutant-General, to be appointed; Treasurer, W. L. Lancaster; Superintendent of Education, W. F. Feagin; Commissioner of Agriculture, J. A. Wade; ex-officio Commissioner of Insurance, John Purifoy—all Democrats.

Supreme Court. Chief Justice, John C. Anderson; Associate Justices, Thomas C. McClellan, J. J. Mayfield, A. D. Sayre, Ormond Sommerville, William H. Thomas, and L. D. Gardner; Clerk, Robert F. Ligon—all Democrats.

State Legislature, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	34	104	138
Republicans	1	2	3
Democratic majority..	33	102	135

The representatives in Congress will be found in the section *Congress*, article United States.

ALABAMA, University of. A State university for higher education, founded at University, Ala., in 1831. The students enrolled in all departments of the university in the autumn of 1914 numbered 750, the faculty numbering 75. There were no notable changes in the faculty during the year, and no noteworthy benefactions were received, the university being supported chiefly by State appropriations. The annual income amounts to $165,000. The library contains 35,000 volumes. The president is George H. Denny, LL.D.

ALASKA. The year 1914 has been fruitful in events beneficial to this great Territory. There have been materially increased outputs of gold and silver, while copper has held its own. The fishery products exceed by 25 per cent the values of 1913. Congress has treated the Territory of Alaska with unusual liberality and consideration, authorizing an expenditure of $35,000,000 for a system of railroads, and appropriating more than $200,000 for aids to navigation. It also enacted laws which open to the public coal lands, so long withdrawn from general entry or use, and which now can be utilized under regulations promulgated by the Secretary of the Interior. The seal controversy, after years of bitter discussion, has been thoroughly examined and studied by a body of competent and impartial investigators, whose report promises definite conclusions.

Population. The Governor of Alaska estimates that there has been an increase of 3000 in the white population since 1913, raising it to 39,000 in all. The native population of about 27,000 remains nearly stationary.

Mineral Production. The advance report of Jan. 1, 1915, by A. H. Brooks, the Alaskan expert of the Geological Survey, gives the following as to the mineral yield of 1914: The mineral output of Alaska to date aggregates $268,000,000, of which $248,300,000 was in gold, and $19,800,000 in copper. The estimated value of 1914 is $19,248,000, as compared with $19,416,000 in 1913, divided as follows: gold (1914) $15,900,000, (1913) $15,626,813; silver (1914) $191,000, (1913) $218,988; copper (1914) 20,850,000 pounds, value $2,872,000, (1913) 21,659,953 pounds, value $3,357,293; other minerals immaterial changes from 1913. Placer gold remains unchanged in values, (1914) $10,700,000, (1913) $10,680,000, but there were increases in Ruby, Hot Springs, Iditarod, and Seward Peninsula districts, and marked decline from Fairbanks, and smaller declines elsewhere. The Chisana is the only new placer camp developed in 1914, though prospects are good in Healy River and the upper Tolovana. About 26 gold-lode mines produced gold to the value of $5,100,000, as against 30 mines and $4,814,813 in 1913; Juneau remains the most important camp. Low prices closed four of the seven copper mines in operation on August 1, when extensive developments were in progress. Alaska has produced 550 tons of tin, valued at $432,000, of which 50 tons were obtained from placer mines in 1914. Some tin was also produced by the lode-tin mine at Lost River, Seward Peninsula. Coal mining made no progress awaiting legislation, which came too late to affect this industry. Only one productive mine was worked, in one of the lignite fields. One patent only was issued in 1913, that to the mine at Port Graham. (For additional information as to coal, see Congressional Legislation, below.) The output of tin, marble, gypsum, quicksilver, coal, and petroleum in 1914 was $285,000, against $272,242 in 1913. Important advances in mining are as follows: Dredges increased from 39 in 1913 to 44 in 1914. In Southeastern Alaska the Alaska Juneau has been added to the Treadwell group in reaching a productive stage. In the Fairbanks district 75 placer mines were operated, employing 1000 men, the decreased output being due to increased cost,—fuel, etc.,—which forbid the mining of low-grade gravels. The productive creeks range as follows in importance: Cleary, Goldstream, Dome, Esther, Fairbanks, and Vault. Cheaper power, fuel, and supplies are hoped for with the coming of a railway from tide-water. Abundant water raised the output of Iditarod and Innoko districts to $2,200,000. While open-cut work with steam scrapers is general, two dredges have been installed. Important mining developments were made on Candle and Moore Creeks, tributaries of the Upper Tokotna. The production of Seward Peninsula has risen from $2,500,000 in 1913, to $2,700,000 in 1914; 1200 men were engaged in summer, of whom 450 were on dredges.

Agriculture. So far farming and stock raising have been successful only to a limited extent, near the larger cities and for local markets. The United States is steadily endeavoring through experimental stations to determine the kinds of crops, and the special species, that can be profitably raised in the Territory. The experimental stations thus engaged are distributed as follows: Sitka, the central office, applies its efforts to horticulture, vegetables, nursery and orchard work. The pasturage of Kodiak Island has caused this station to be occupied for stock raising—sheep, dairy cattle, and breeding cattle. The Rampart station, in the Yukon valley, not far south of the Arctic Circle, has been more or less successful in the experimental growth of grains. Barley, oats, alfalfa, and wheat, of selected kinds, are found to ripen despite the shortness of the summer. The Fairbanks station, in the Tanana Valley, is devoted to farm demonstration for the encouragement and benefit of the many farmers in the valley. Vegetables, especially potatoes, hardy grains, and pig raising are the main lines of work.

Commerce. The value of merchandise shipments, including precious metals and copper, between Alaska and the United States, and between the Territory and foreign countries in the fiscal year 1912–13, amounted to $61,076,692. Shipments of domestic merchandise from the United States to Alaska showed an increase of

$1,749,912 over the previous fiscal year. There was an increase of copper production of $296,937 over that of 1913, and an increase of $44,268 in marble exports. A decrease in the volume of exports is shown over that of the previous year due to the falling off in gold production. The total value of merchandise sent from the United States to Alaska in the fiscal year 1913–14 was $29,929,460. Of this, a value of $11,880,140 was for manufactures ready for consumption, $4,759,294 was for foodstuffs, partly or wholly manufactured, and $1,520,565 was for foodstuffs in crude condition and food animals. The shipments from Alaska to the United States that year amounted to $20,394,582, compared with $23,006,246 in 1913. Of the total value, $14,484,424 was of foodstuffs, partly or wholly manufactured, chiefly products of the fisheries. The shipments of gold and silver in 1913–14 amounted to $12,440,118, compared with $14,707,027 in 1912–13; copper shipped amounted to 25,583,458 pounds, valued at $3,876,411, compared with 21,466,348 pounds, valued at $3,579,474. The imports into the Territory from foreign countries in 1913–14 amounted to $567,399, compared with $982,271 the previous year. The larger part of this came from the United Kingdom. The exports to foreign countries, the greater part to Canada, amounted to $1,090,763, compared with $1,452,546 in 1912–13. The volume of shipments to and from Alaska materially increased in value during 1914. The exports and imports for the eleven months ending Nov. 30, 1914, exceeded those for the same months in 1913 by $2,664,821, of which amount $2,148,425 was in gold and silver bullion. It is of interest to note that in 1914 the liquors shipped to Alaska decreased in value by $93,533, as compared with the previous year.

FISHERIES. The value of the fishery products from Alaska, including aquatic furs, whales, etc., approximates that of minerals. While statistics are lacking for the complete year of 1914, there are sufficient data to show an advance of 25 per cent over that of 1913. For the eleven months, January to November, inclusive, the value of fishery products exported from Alaska are as follows: 1912, $16,322,135; 1913, $15,189,533; 1914, $19,027,970. Most important of all is the salmon fishery, which from 1868 to 1913, inclusive, produced values of $155,041,769, being 96 per cent of the value of the products of small fish for that period. It is clearly apparent that the salmon catch of 1914 is the largest in the history of the country, the shipments from January to November, inclusive, being $18,187,509, as against $14,190,776 for 1913, and $15,857,595 for 1912. The increase in 1914 is mainly due to the very large pack of red salmon in the Bristol Bay region. In central Alaska the run of pink salmon was particularly noteworthy, while in southeastern Alaska the run of pink salmon and of chum were light. Unusually large shipments of fresh salmon were made from southeastern Alaska, the standard king salmon being supplemented by other species. Cod, herring, and halibut fishing have been somewhat less productive owing to war conditions. An additional whaling station is now operated in Alaska, one in southeast Alaska, and the other near Uminak Pass.

In the calendar year 1913 there were 21,721 persons engaged in all branches of the industry; these included 11,892 whites, 4164 natives, 2061 Chinese, 1693 Japanese, and 1911 miscellaneous, including Filipinos, Koreans, Mexicans, and others. There was a decline of 2542 persons in the total number employed in 1913, as compared with 1912, which was due chiefly to the fact that a number of fishing establishments were not operated. The total investment in the fisheries of the Territory in 1913 was $37,047,205, a decline of $1,216,152 from 1912. During 1913 there were 42 salmon canneries operated in southeast Alaska, 9 less than in 1912; 14 in central Alaska; and 23 in western Alaska.

NATIONAL FORESTS AND HOMESTEADS. There are two national forests in Alaska, Tongass National Forest in the southeastern part, and Chugach National Forest in the southwestern section. Of these Tongass is by far the most important. The total receipts from these forests for the fiscal year 1913–14 were $58,781, and the total cost of administration was $38,763. There were cut from the forests 43,756,712 board feet of timber. All persons living on or near the national forests are permitted to take free of charge all the wood they need for their own domestic purposes. Timber needed by prospectors in the actual developments of their claims, prior to reaching the shipping stage, is also free of charge. The number of homesteads surveyed during the year was 36, and the total number of timber sales was 348.

FURS AND FUR-BEARING ANIMALS. The value of aquatic furs and skins to include 1912 aggregated $63,665,782, of which the fur-seal values amounted to $50,993,911. The fur shipments for 1913 were valued at $752,193, which will be somewhat exceeded in 1914 as the shipments to include November 30 are $7000 larger than in 1913. The number of fur-seal skins from animals killed for food approximate 2500 in 1914. The regulations of the Secretary of Commerce, in force on Jan. 1, 1915, for the protection of fur-bearing animals were as follows: Killing prohibited for fur-seal until 1917, beaver until 1918, sea-otter until 1920, land-otter (Afognak reservation) until Nov. 16, 1915, foxes (Afognak) until Nov. 16, 1918. Mink, land-otter, marten, weasel, muskrat, lynx, and fox are protected during the breeding season,—generally from April to November. Black bear, wolf, wolverine, squirrel, and hare may be killed in any season. The use of poison is prohibited, as well as the barter or possession of an unprime skin of any fur-bearing animal. Fox farming is being gradually extended to suitable islands, which are now leased under advertisement by the United States for exclusive use for this purpose.

Fur Seals. The North Pacific Sealing Convention of July 7, 1911, prohibiting pelagic sealing continues in force and has been efficiently enforced, as well as the act of Aug. 24, 1912, for a close season until 1917. The natives of the Pribilof Islands kill enough for food. Measures have been taken definitely to settle the prolonged and bitter controversy as to the best methods of preserving and utilizing the Alaskan seal herds. In January, 1914, the Commissioner of Fisheries recommended an investigation of the whole subject by three recognized experts, not previously identified with fur-seal matters. The Secretary of Commerce caused to be appointed as such investigators the three following: Mr. Edward A. Preble, Bureau of Biological Survey, nominated by the Secretary of Agriculture; Mr. Wilfred H. Osgood, Field Museum of Natural History, Chicago, nominated by the Secretary of the Smithsonian Institution; and Professor George H. Parker, Harvard University, nominated by the National Academy of Sciences. These officials made a thorough investigation of the seal islands and their full report on the seal herd, now in preparation, will be submitted early in 1915. A careful census was made of the seal herds of the Pribilof Islands, and it is believed that the number has materially increased since previous census, which showed 215,940 in 1912 and 268,305 in 1913.

Reindeer. The reindeer industry has in 20 years made the natives inhabiting the coastal regions from Point Barrow to the Alaska Peninsula a comparatively civilized and thrifty people. They have by their herds assured support for themselves and opportunity to acquire wealth by the sale of meat and skins. During 1912–13 nine new herds were established. On June 30, 1913, there were 47,266 reindeer in the 63 Alaska herds, or a net increase of 23 per cent for the fiscal year. The number of deer owned by the natives has increased from 6406 in 1907, to 30,532 (65 per cent of all) in 1913. The total number on June 30, 1914, was approximately 60,000. The original cost and subsequent care of the herds to 1913 amounted to $297,000, while the value and income in 1913 was estimated to be $1,463,171.

Education. In 1914 there were 27 schools for white children outside of incorporated towns, and these employed 38 teachers and had a total enrollment of 941. There are a number of communities which are denied the privilege of educating their children because of an insufficient number of school age to entitle them to the establishment of schools, as the existing law provides that there shall be at least 20 white children of school age in a community, outside of incorporated towns, before a school can be authorized. The law also limits the amount which may be expended in the construction of a school building to $1000, which was frequently found to be insufficient to cover the cost. The school attendance is regulated by a compulsory education law enacted by the territorial legislature at its first session in 1913. This law applies to white children and those of mixed blood between the ages of 8 and 16, living civilized lives in the Territory, and residing within two miles of any school outside of incorporated towns. Similar provision was made for the compulsory education of native children and children of mixed blood between the ages of 8 and 16, not living civilized lives, where such children reside within one mile from the United States Public School. The schools in incorporated towns are supported by local taxation. Equally important, and even more comprehensive and extensive is the work of the Alaskan Bureau of Education, which maintains at the expense of the United States, schools in 77 villages, with an enrollment of 3563 native pupils, and an aggregate force of 132 officials, teachers, nurses, doctors, etc. Teachers are required to promote the moral, physical, mental, and industrial welfare of the native adults as well as children. Carpentry, cooking, laundering, sewing, gardening, and sanitation are given special attention. Medical care is also exercised under the supervision of an officer of the Public Health Service, which during 1914 utilized seven hospitals and treated nearly 4000 cases. The economic conditions have been improved by the establishment of coöperative stores for the natives at Gambell, Wales, Hydaburg, and at the remote isle of Atka. The Bureau also fosters the plan of concentrating colonies of selected natives on reservations, near good fishing and hunting grounds, where they will be removed from white settlements and learn methods of self-government, coöperative work, etc. Such native communities have lately been established of Haidas at Hydaburg, Prince of Wales Island, of Klukans in the valley of the Chilka, and of Klawocks in Tongas forest; marked improvement of these villages is noted in 1914. The Duncan colony of Metlakahtlas, on Annete Island, has been materially benefited by the establishment of a school in the fiscal year 1913–14. The day school has 120 enrolled pupils, and the night school about 30: the Indians contribute $250 towards the salary of the teacher.

Transportation. The railway systems remain unchanged at 466 miles, of which only 261 were operated during 1914,—the White Pass and Yukon, the Tanana, and the Copper River and Northwestern Railroads. Surveys have been made for the government railroad, authorized by the act of March 12, 1914, which is elsewhere considered. While railroads are essential to the development of great industrial enterprises, roads and trails are absolutely indispensable to daily life and for the advancement of mining, the principal resource of the Territory. The Board of Commissioners, under Colonel Richardson, has completed up to June 30, 1914, an aggregate of 4298 miles of roads, etc., divided as follows: 870 miles of wagon roads, 618 miles of winter sled-roads, 1810 miles of regular pack trails, and 1000 miles or more of flagged winter trails. A wagon road permits stage travel from Valdez to Fairbanks, whence by sled roads Circle and Fort Gibbon on the Yukon River are comfortably and speedily reached in winter. Pack trails extend as far north as Candle on Kotzebue Sound, to the valley of the upper Koyukuk, and beyond Fort Yukon.

Telegraphs. The military cable, wireless and land-line system extends from Seattle, Washington, to Nome, Sitka, Skagway, Fairbanks, Juneau, Ketchikan, and other points, enabling telegraphic communication with the rest of the world. The efforts and recommendations of the Postmaster General to secure authority of Congress for the transfer of this system to his department have been so far fruitless, although the War Department approves of such action. The following important radio (wireless) stations are maintained in addition to the cables and land-lines: *U. S. Army;* Circle, Fairbanks, Fort Egbert, Fort Gibbon, Nome, Nulato, and St. Michael. *U. S. Navy;* Cordova, Dutch Harbor, Kodiak, St. Paul (Pribilof Islands), Sitka, and Unalga. *Commercial;* Iditarod, Juneau, Karluk, Hallerville, Ketchikan, Naknek and Nushagak. A commercial network of telephone lines on Seward Peninsula brings Candle and Deering on Kotzebue Sound into the general telegraphic system.

Aids to Navigation. The Alaskan waters are largely uncharted, and until recent years the dangers of navigation were still further enhanced by the absence of aids to ship-masters in the way of lights, fog-signals, etc. The number of lights was increased by 15 during the past year, making the aggregate number on June 30, 1914, 108, of which 71 had been installed between 1911 and 1914. There are now 319 aids in all, of which 10 are fog-signals, 157 buoys, and 44 day marks. Work is progressing on the establishment of a light and fog-signal at or near Cape St. Elias, for which the sum of $115,000 was appropriated by the act of Oct. 22, 1913. The sundry civil act approved Aug. 1, 1914, appropriated $60,000 for the improvement of existing aids to navigation in Alaskan waters, which are now in progress of installation in the form of lights, fog-signals, etc.

CONGRESSIONAL LEGISLATION. The Sixty-third Congress enacted into law two very important measures intended to alleviate conditions which for years have prevented development of the resources of the Territory. The first of these measures provided for a government owned railroad and the second made provision for utilizing the coal deposits. The passage of the former measure was due largely to the exertions of Secretary of the Interior Lane. In June, 1913, he called the attention of the Senate Committee on Territories to the importance of railways in the development of resources in Alaska, and shortly after began the preparation of a bill making provision for the construction of a government owned railroad. In a previous year the President had appointed a railroad committee consisting of Major Jay J. Morrow, Engineer Corps, U. S. Army; Alfred H. Brooks, geologist in charge of Alaskan surveys; Leonard M. Cox, civil engineer; and Collin Macrae Ingersoll. The commission was authorized to conduct an examination into the transportation question in the Territory; to examine railroad routes from the seaboard to the coal fields and to the interior, and navigable waterways; to secure surveys and other information with respect to railroads, including cost of construction and operation; to obtain information in respect to the coal fields and their proximity to railroad routes; and to make report thereon to Congress, together with their conclusions and recommendations in respect to the best and most available routes for railroads in Alaska. This commission at once began work, and largely as a result of its investigations, congressional action followed. The Act of Congress, March 12, 1914, provides for an appropriation of $35,000,000 for the construction of 1000 miles of railroad and for the acquisition of existing lines. The government may operate or lease the roads, which are to extend from the harbors on the southern coast to the navigable waters and agricultural lands of the interior and also to the coal fields. The President is authorized to appoint officers and agents, and in general to supervise the construction and operation of the road. He is also given power to utilize machinery no longer needed for the Panama Canal if he deemed it advisable. In May, 1914, President Wilson appointed a commission to locate the projected railroads and superintend their construction. This commission includes Lieut. Frederick Mears, of the Navy; William C. Edes, and Thomas Riggs, Jr., of the U. S. Coast and Geodetic Survey. Preparations were made by the U. S. Geological Survey to send 11 parties to make investigations as to the mineral resources of the Territory. These parties will visit all the known and unknown regions and their inquiries will relate in part to the location of the railroad lines.

The act of Oct. 20, 1914 provides for the utilizing of coal lands. By its main features, all coal lands are to be surveyed, and of them there are to be reserved for the United States not exceeding 5120 acres of the Bering River field, 7680 acres of the Mantanuska field, and one-half of other coal lands. Unreserved coal lands may be leased to adult citizens, or American corporations, in 40-acre blocks, not exceeding in the aggregate 2560 acres, for 50 years, with opportunity of renewal. Royalties for coal mined are to be not less than two cents a ton, and land rentals varying from 25 cents to $1 per acre annually, chargeable against royalties for the year. Rentals and royalties, together with profits from government mines are to be used for the improvement of Alaska, the residue to be turned into the Alaskan Fund. For domestic needs free licenses are guaranteed, without royalties, for not more than 10 acres of coal land. Provisions are made for an eight-hour day, for the welfare and safety of the miners, and against waste, carelessness, overcharging, and subletting.

COAL PERMITS. Temporary regulations for the issuance of permits for the free use of coal in the unreserved public lands of Alaska were promulgated by the U. S. Commissioner of Public Lands on Dec. 30, 1914, the coal fields of Bering River and Mantanuska being specially reserved for the present. Adult citizens and American corporations,—railroads and common carriers excepted,—may mine coal for use and for sale. Permits are for two years, subject to renewal; they cover 10 acres of coal lands which shall have been previously marked by the applicant with substantial monuments. Coal thus mined must be sold for a reasonable price, covering expense of mining, etc. The regulations are of a temporary character under Section 10 of the act of Oct. 20, 1914, pending the preparation of permanent regulations.

ALASKAN-CANADIAN BOUNDARY. The demarcation of the entire boundary line between Alaska and Canada was completed in 1914 under the direction of a joint commission composed of O. H. Tittmann, Superintendent of the United States Coast and Geodetic Survey, and W. F. King, the Dominion Astronomer of Canada.

The boundary of Southeastern Alaska was delimited in conformity with the award of the London Tribunal of 1903, and with the agreement of 1905 in regard to a certain portion of the line. The water boundary from the southernmost end of Prince of Wales Island eastward and through Portland Canal, and to its head, was carefully established and defined by reference monuments on shore. The deflection points on the land boundary were trigonometrically determined. The river crossings and passes, and many other points were monumented, and the whole region along the land boundary was mapped either photo-topographically or, at the crossing of the streams, with the plane table.

The delimitation of the one hundred and forty-first meridian was effected under the treaty of 1906. Starting at a point a little to the westward of the highest peak of Mount St. Elias the boundary line runs north for 646 miles to the Arctic Ocean. A trigonometric and topographic survey covering a width of 2.5 miles on each side of the boundary was made, and it was marked with aluminum-bronze monuments. The work involved hardships and the overcoming of many difficulties. Prior to the survey, the Arctic end of the boundary was practically unknown, and the region for 70 miles north of Mount St. Elias, except as seen by Abruzzi and Russell from that mountain, was unexplored. A large part of the glacial area of this boundary lies at elevations from 6000 to 15,000 feet and was mapped by photography. The final marking of this boundary is an important event as it removes all sources of international dispute, which might arise from lack of such a demarcation. The maps of the one hundred and forty-first meridian area are now being printed, and those of Southeastern Alaska are in course of compilation.

ALBANIA. Formerly a Turkish possession; created an independent state by the provisions of the treaty of London May 30, 1913. The area is estimated at 28,000 kilometers, carrying 800,000 inhabitants. Scutari has about 30,000 inhabitants.

HISTORY. The Embassadorial Conference agreed Dec. 20, 1912, to the principle of Albanian autonomy, and before the close of the year 1913 it had become pretty generally known that the Powers had settled upon the Protestant German Prince William of Wied, a relative of the Queen of Rumania (Carmen Sylva), to be the first prince of the independent principality of Albania. Early in 1914 Prince William paid brief visits to Vienna, Rome, London, Berlin, Paris, and St. Petersburg, with the hope, it was believed, of inducing the Powers to guarantee him a loan of $15,000,000. He was able to secure only an advance of $2,000,000 from Austria-Hungary and Italy, the two Powers which had insisted upon the creation of Albania; but this amount appeared to be satisfactory, for Prince William graciously accepted the crown offered him on Feb. 23, 1914, by a delegation led by Essad Pasha. Meanwhile, the International Commission of Control, which was to assist and superintend the pacification of Albania, had met on Dec. 15, 1913, at Avlona, and had received the submission of Ismail Kemal Bey's provisional government in January, and, somewhat later, the resignation of Essad Pasha. On January 6 an expedition of 200 Turkish adventurers, led by Bekir Agha, had landed on the coast of Southern Albania, with the obvious intention of stirring up trouble and with the suspected intention of proclaiming Izzet Pasha (a prominent Turkish general, statesman, and diplomat) as prince of Albania. The expedition was a ludicrous failure, and its officers were court-martialed while the common soldiers were deported. In this fashion Ismail Kemal Bey, Essad Pasha, and the Turkish filibusterers had been disposed of, clearing the way for the spectacular arrival of William of Wied on March 7, 1914, at Durazzo, which had been selected as the capital.

As the founder of the first Albanian dynasty, the prince took the name William I; in the European press he speedily became known as "the *Mpret*" (the Albanian word for prince). A few days after his accession, William issued a proclamation to his people, and installed a ministry (March 17), constituted as follows: grand vizier, Turkhan Pasha; war, Essad Pasha; interior, Prenk Bib Doda; justice, Aziz Pasha; education, Dr. Tertulli Bey; agriculture, Assan Bey Pristina. The grand vizier was acknowledged to be a statesman of wide experience and considerable ability; his colleagues in the departments of war and the interior were selected for their powerful influence respectively with the Mohammedan and the Roman Catholic elements in Albania. Essad Pasha, however, proved himself to be a most unruly cabinet officer. He was so strongly suspected of fomenting rebellion against the government, that on May 19 he was arrested by the gendarmerie, after an exchange of shots, and deported to Brindisi, Italy. Essad's flight occasioned a cabinet crisis, resulting in the formation of a new cabinet under Turkhan Pasha, as follows: grand vizier and minister of foreign affairs, Turkhan Pasha; minister of the interior, Akif Pasha; finance, Philip Nogga; justice, Mufid Bey Libohova; public works and posts, Midhat Bey Frasheri; education, Dr. Tertulli Bey; agriculture, Abdi Bey Toptani.

During the months of February, March, April, and May, the chief difficulty of the Durazzo government was with the Greek-speaking inhabitants of northern Epirus. An international commission, it will be recalled, had in 1913 assigned to Albania the districts of Tepeleni, Argyrocastro, Kolonia, Premetti, and Leskoirk, in the face of energetic opposition. The Greek-speaking inhabitants of these districts of Epirus, under the leadership of M. Zographos (a former foreign minister of Greece) on Feb. 28, 1914, declared their intention of resisting incorporation into Albania. At Argyrocastro they established a provisional government, defying the Albanian gendarmerie, and successfully meeting force with force. The Powers, appealed to by the Albanian government, remonstrated with the Greek Government for its presumed encouragement of the Epirote insurrection, and for its delay in withdrawing the Greek troops from Southern Albania. In reply, the Greek government testified to "the grief which she (Greece) feels to have to separate herself from regions Greek in culture and national consciousness since thousands of years, and from Greek populations which after so many centuries have just welcomed their national reëstablishment with an unconquerable sentiment of patriotism." Greece secured a slight "rectification" of the frontier in the Argyrocastro region; as for the rest Greece agreed to withdraw her troops and offer no resistance, either directly or indirectly, to the fulfillment of the Powers' wishes regarding Southern Albania. On the basis of this arrangement the Powers on May 7 intervened to bring about an armistice in the Epirote insurrection, and ten days later representatives of the Epirotes and of the International Commission reached an agreement at Corfu, according to which the rebels were to receive full amnesty, the Greek-speaking Epirotes were to have satisfactory safeguards for their language and religion, and the districts of Koritza and Argyrocastro were to be granted a considerable measure of self-government with Christian governors and elective councils.

While the *Mpret* was congratulating himself upon the settlement of the Epirote question, he was suddenly confronted with a more serious danger. Essad Pasha while holding the portfolio of the interior had been secretly stirring up insurrection among the Mohammedan subjects of the *Mpret*. The traitorous minister was exiled, as we have already noted, on May 19; but the Moslem insurrection was not thus to be averted. In formidable numbers the Moslem insurgents approached Durazzo. For a moment William lost courage and took refuge on the convenient Italian warship *Misurata*, May 23; he returned to his capital, however, with a firm determination to suppress the insurrection. On June 15 the insurgents attempted to carry the city by storm, only to be repulsed by the loyal garrison and the Austrian guns of the palace. The defenders of Durazzo lost 35 wounded and 2 killed, including the Dutch officer, Colonel Thomson, who had been placed in charge of the Albanian Gendarmerie. Throughout July the *Mpret's* situation continued to grow more uncomfortable, as the Powers neglected to furnish him with financial or military aid, and the insurgents besieging Durazzo clamored for his abdication. For a time hope was entertained that Rumania would be authorized as the mandatory of the Powers to quell the rebellion.

The outbreak of war in Europe, and the resulting inability of the "concert of the Powers" to come to William's support, spelled success for the insurrection. Shortly after the Powers withdrew their forces from Scutari, it was reported that the insurgents had occupied Avlona and were overrunning all Central Albania. On September 3 William fled the country, leaving behind him a proclamation, assuring the Albanians that although it was at present expedient for him to leave his realm, he had no intention of abandoning his task; "whether far or near," he declared, "I shall have only one thought—that of working for the prosperity of the noble, chivalrous Albanian country. During my absence the International Commission of Control will assure a government." The International Commission did not even attempt to govern the country. The rebel Moslem forces easily captured the capital and elected Prince Mohammed Burham Eddin Effendi, the fourth son of the ex-sultan Abdul Hamid, to be prince of Albania under the suzerainty of Turkey. The real power in Albania, however—for Mohammed Burham Eddin Effendi was not in Albania at all—was Essad Pasha, the exiled minister of war, who had returned to lead the Moslem forces, and was installed as grand vizier. Now again the Epirote question was raised, for the Greek Christians in Northern Epirus would never submit to a Moslem government. Anarchy reigned in the south of Albania, and in the central and northern portions the condition was most serious on account of the scarcity of food. No one was much surprised, consequently, when Greek troops again, late in October, occupied Northern Epirus, and simultaneously Italy sent an expedition to Avlona. M. Venizelos, on the part of the Greek government, disclaimed any intention of regaining part of Southern Albania (*i.e.*, certain districts of Northern Epirus) for Greece; and the action of the two countries was explained as a simple police measure, designed to maintain order and to relieve some of the misery of the starving Albanians. In December a counter-revolution threatened to destroy the power of Essad Pasha, and furnished Italy with an occasion for occupying Avlona in force, December 25.

More of interest than of importance attached to the picturesque escapades of George Fred Williams, formerly United States minister at Athens, who was relieved of his diplomatic post after having provoked a storm of sarcastic criticism by his very undiplomatic comments on the Albanian situation. From Athens, Mr. Williams journeyed to Epirus, fearless in his conviction that by organizing a cantonal form of government he could solve the Albanian problem. Upon his return to the United States, Mr. Williams informed the Press that the Albanians would gladly have made him their ruler.

ALBERT, KING OF BELGIUM. See BELGIUM and FRANCE, under section *History;* and WAR OF THE NATIONS, *passim*.

ALBERTA. A province (since Sept. 1, 1905) of the Dominion of Canada. It includes the former district of Alberta, the western part of Athabasca, and a strip of Assiniboia and Saskatchewan. The capital is Edmonton. Area, 255,285 square miles, with (1911) 374,663 inhabitants. The population has increased rapidly from 72,841 in 1901—an increase of 413.1 per cent. Free homesteads are available for thousands of settlers. Edmonton had, in 1911, 24,900 inhabitants; Calgary, 43,704; Lethbridge, 8050; Medicine Hat, 5608; Strathcona, 5579, but the population has greatly increased since the census was taken. During 1914 there were nearly 1000 miles of new railway put into operation, and at the end of the year, the total mileage was 4250, having doubled in amount since Dec. 31, 1911. The provincial government is under a lieutenant-governor, appointed by the governor-general of Canada; he acts through an executive council, or responsible ministry, of eight members. There is a unicameral legislative assembly of 56 members directly elected for five years. The lieutenant-governor in 1914 was George Hedley Vicars Bulyea, appointed Sept. 1, 1905. Premier 1914, A. L. Sifton. See CANADA.

ALCOHOL. The campaign against alcohol, waged of late years in various European countries, was brought sharply to a focus by the European war of 1914. The conditions under which modern warfare is waged necessitate strict discipline, efficiency, endurance, and self-restraint on the part of both officers and men, and it was suddenly realized that habitual indulgence in alcoholic beverages precluded these requirements. In Germany strict orders were issued when the army was mobilized against selling or offering for sale to the troops alcohol in any form. In France the Parisian prefect of police forbade the sale of absinthe during mobilization, a measure followed by prefects of several other departments. Finally the sale of absinthe was forbidden throughout all France by order of the minister of the interior. In Morocco the evil consequence of furnishing alcohol to the natives became so apparent that the absolute interdiction of absinthe to Europeans as well as natives had to be enforced. A decree of the Sultan was issued prohibiting the importation, manufacture, circulation, or sale of absinthe and similar products in the French portion of the country, except by pharmacists or for municipal purposes. Heavy penalties were enforced against violations of this decree. Vodka, the favorite alcoholic beverage of the Russians, and the cause of much poverty and wretchedness among them, came under the government ban at the beginning of the war. Not only in the army, but throughout the whole of Russia the manufacture of vodka was stopped and the reported results tax the credulity of the hearer. Bank savings are said to be greatly increased, artisans work a day or two more per week, wretched villages have taken on the appearance of thrift, food and clothes are plentiful, and petty crimes of all sorts are rapidly diminishing. The last appeal against Russia's prohibition decree failed in December. Even beer and light wines were banned, subject to authorization by local city councils. In Great Britain less drastic measures have been adopted, but general sobriety and the early closing of liquor shops have been the rule.

In the early part of 1914 alcoholic beverages were entirely abolished in the United States navy under an order issued by the Secretary of the Navy. This order reads, "The use or introduction, for drinking purposes, of alcoholic liquors on board any naval vessels, or within any naval yard or station, is strictly prohibited, and commanding officers will be held directly responsible for the enforcement of this order." Finland had twice passed national prohibition. Greenland and Iceland voted themselves "dry." The *Liquor Dealers' Journal* asserts that 27 per cent of the States in the United States were ready to vote for national prohibition.

The influence of alcohol on heredity, a subject which has furnished many a warm debate, has been studied during the last four years by Stockard of the Cornell University Medical School. He apparently has shown that the germ cells of males can be injured by allowing the individuals to inhale alcohol fumes to the extent of producing defective offspring even when mated with vigorous untreated females. He has shown also that these offspring on reaching maturity are nervous and undersized and that their descendants for three generations at least possess similar characteristics. Stockard regards it as plainly demonstrated that the spermatozoön is actually weakened, if not disabled, by alcohol, and that all individuals arising from combinations involving such germ cells are likely to be sub-normal. These experimental observations are reënforced by a number of statistical studies. For example, Juillerat and Filassier, the latter chief statistician of Paris, published the results of researches made by them into the causes of infant mortality in Paris, which researches show concisely the ravages of alcoholism. In ten years, from 1903 to 1914, almost half of the 97,885 children dying were under 11 months old, congenital debility being responsible for 12,342 of these deaths. The investigators assume that this enormous proportion is attributable to alcoholism in the parents, and use Jacquet's statistics to bear them out. In the investigation which Jacquet made from May 1, 1913, at the hospital Saint Antoine, he divided the 396 patients whom he examined into three classes: moderate alcoholics (who consumed a liter of wine per diem); decided alcoholics (those consuming from 1.5 to 2 liters of wine); and the very decided alcoholics (those who habitually consumed 2 liters of wine or more). These patients had a total of 879 children. The moderate drinkers numbered 141, the births among them 305, and the deaths 83, or 18.78 per cent. The second class, numbering 108, had births among them numbering 248 and deaths 115, or 26.01 per cent. The decided alcoholics numbered 147; they produced 326 children of whom 244 died, a percentage of 55.47 per cent. Of the 442 dead children, 272 succumbed in early infancy. These 396 individuals, all addicted to alcohol in various degrees, showed a round mortality of 50.28 per cent. Similar studies from the department of the Vosges lead to the same conclusion. He showed that it is the nonalcoholic regions of France which have the smallest number of deaths from tuberculosis, about 1.95 per thousand of the inhabitants. In the West, where there is a heavy consumption of alcohol, the rate is 2.61 per thousand. In the West also infant mortality is particularly high, hereditary weakness, insufficient maternal care and poor food being contributory factors. Alcohol is even sometimes put into the nursing bottle. The greatest number of alcoholic women is found in Normandy. See INSANITY; VAGRANCY.

WOOD ALCOHOL. Steadily increasing employment of wood alcohol in industrial processes has given impetus to the study of the toxicity of this substance. Methyl alcohol gains access to the body in three ways, namely, by the stomach, by inhalation of its vapor, and by external application to the skin. Its absorption by any of these methods may give rise to blindness (due to atrophy of the optic nerve), death, or lesser degrees of poisoning. New York City places strict regulation upon this substance and carries on investigations continually. From July 1, 1913, to July 1, 1914, the Department of Health examined 233 toilet preparations intended for external use, in none of which did the label announce the presence of wood alcohol when it existed. Of 158 specimens of bay rum 61 contained methyl alcohol; 14 of the 33 specimens of hair tonic examined were thus adulterated; 11 of 220 samples of toilet water, and 2 out of 19 specimens of witch-hazel contained it. A considerable number of cases of fatal poisoning have been reported from inhaling the fumes of wood alcohol in confined spaces. Under such circumstances the vapor was believed to be in a very concentrated form. According to recent investigations by Loewy and von der Heide at the Royal Agricultural College in Berlin, it is proved that relatively small quantities of the fumes may produce chronic poisoning; amounts as low as 0.2 per cent in the inspired air may lead to absorption, which though slow, none the less produces saturation of the organism with the alcohol. The same investigators also announce that fat animals absorb considerably less vapor than lean subjects. This is believed to be due to the fact that alcohol is not readily soluble in fats and lipoid tissues. According to the *Journal of the American Medical Association* nearly a thousand cases of poisoning have been reported since 1893, the date when methyl alcohol of a high degree of purity began to be made. The *Journal of Industrial Engineering and Chemistry* states that the business of manufacturing methyl alcohol amounts to about ten million gallons annually, with a capital investment in this country of about twelve million dollars. Over three thousand workers are employed. There were in 1914 sixty-three manufacturers of wood alcohol in the United States. See OCCUPATIONAL DISEASES.

ALFALFA. Estimates on the annual production and acreage of alfalfa, as for wheat and other leading crops, are not published and the output of alfalfa hay is generally included in the figures representing the total yield of hay from all crops grown for the purpose. It is evident from reports in the agricultural press and from the interest exhibited in the crop by institutions and organizations such as the agricultural colleges and experiment stations, State boards or commissions of agriculture and the like, that the value of the plant as a source of forage and as a means of soil improvement is being more and more appreciated and its area extended. In Wisconsin, for example, an Alfalfa Order has been organized among the farmers constituting the Experimental Association established in the State, and through its efforts high-grade and selected seed is bought on the coöperative plan and distributed at a material saving in price and widespread coöperation in testing the crop is secured. It is reported that of 240 trials where alfalfa was grown for the first time 88 per cent were successful. The members of the organization are also coöperating in determining the relative value of seed grown on irrigated and nonirrigated lands, of seed grown in different sections of the West and of strains of imported seed. Through the work of such agencies the acreage devoted to alfalfa is not only increasing steadily in localities where the crop is already established but its culture is also carried to sections where the plant is new and its requirements must be studied and determined. This extension in the United States has been both northward and southward. To the north its culture extends into Canada where a production of 218,400 tons of alfalfa hay was secured in 1914. The preceding year the production amounted to 237,770 tons, the reduction in yield for the past year being due to drouth, especially in the western provinces.

As the result of a growing alfalfa area, increased attention is also given to the production of the seed in sections adapted to its culture. According to the Department of Agriculture South Dakota, which is now the leading State in alfalfa seed production, produced in 1914 over 140,000 bushels, having a value of approximately $1,000,000. Experiments conducted by the Colorado Experiment Station at Ft. Collins indicated that continued irrigation for a long series of years so influences the moisture content of the subsoil that the land becomes unsatisfactory for growing alfalfa for seed.

ALGERIA. A country in northern Africa, constituting administratively an integral part of the French Republic. The capital is Algiers.

AREA AND POPULATION. The area and population by departments (census of March 5, 1911), are as follows: Algiers, 54,540 square kilometers, 271,767 European and 1,421,819 native inhabitants; Constantine, 87,302 square kilometers, 155,654 European and 1,945,443 native inhabitants; Oran, 65,897 square kilometers, 319,089 European and 892,212 native inhabitants; making a total for Algeria proper of 207,739 square kilometers, and 746,510 European and 4,259,474 native inhabitants. The Southern Territories covered 367,550 square kilometers, and had 5533 European and 481,052 native inhabitants. Total, Algeria, 575,289 square kilometers, or 222,119 square miles; European inhabitants, 752,043; native, 4,740,526. In addition, the population counted apart numbered 27,295 in Algiers, 17,349 in Constantine, 18,894 in Oran, 7721 in the Southern Territories; making a total for all Algeria of 5,563,828 inhabitants. The births for the year 1910 numbered 153,157, still births 2338, deaths 108,950, marriages 40,776. The communal population of Algiers in 1911 was 172,397; Oran, 123,086; Constantine, 65,173; Bône, 42,039; Tlemçen, 39,874; Blidah, 35,461; Tizi-Ouzou, 31,404; Mascara, 24,254; Mostaganem, 23,166.

EDUCATION, ETC. There were in 1911, 1235 primary and infant schools, public and private, with 3026 teachers and 141,537 pupils; of these schools 226 were Mohammedan. There were 22 secondary institutions, with 5988 pupils (4411 boys, 1577 girls). There are normal schools and Mohammedan industrial schools. State expenditure during 1911, 8,861,798 francs.

Except for the Jewish population, classed as French citizens, the native religion is Mohammedanism. The courts of first instance (native) are administered by the cadis, with an appeal to the French courts.

PRODUCTION. The population reported as engaged in agriculture in 1909 was 3,322,540, of whom 213,756 were Europeans. The plains are very fertile, the mountainous North is largely devoted to grazing, and the coast regions are under high cultivation by Europeans. The area under vines in 1910 was 152,100 hectares, yielding 8,414,000 hectoliters of wine; cereals, 3,001,000 hectares yielding 22,147,000 quintals; roots, legumes, etc., 89,300 hectares, 1,319,000 quintals; forage plants and sown grass, 26,000 hectares, 822,000 quintals. Natural grasses covered 851,000 hectares, the harvest being estimated at 3,871,000 quintals. Olive trees number 6,655,000, yielding 3,364,000 quintals of olives and 351,000 hectoliters of oil. The following figures for 1912 are derived from an English source: 350,652 acres under vines, producing 146,765,982 gallons of wine; 1045 acres under cotton, 6,559,490 acres under forest.

The table below shows area officially reported as under principal cereals (in hectares), production (in quintals), and production per hectare in 1914:

	Hectares		*Quintals*		*Qs. per Ha.*
	1913	*1914*	*1913*	*1914*	*1914*
Wheat	.650,568	672,616	4,000,000	3,000,000	4.5
Barley	.629,887	678,059	5,000,000	1,800,000	2.7
Oats ..	52,581	57,018	600,000	450,000	7.9
Tobacco	2,700	3,000	....	....	..
Vines ..	13,000	14,000	....	....	..

Returns are for the Department of Constantine. The figures for 1914 are subject to slight revision. There were in 1911: 226,764 horses, 192,484 mules, 279,316 donkeys, 1,113,952 cattle, 8,528,610 sheep, 3,561,847 goats, and 110,012 swine.

There were 5392 persons engaged in fishing in 1912, with 1410 boats of 4406 metric tons. Iron, zinc, lead, mercury, copper, antimony, and petroleum are mined.

ALIEN LABOR LAWS. See under LABOR.

ALSACE-LORRAINE. See WAR OF THE NATIONS.

ALTMAN COLLECTION. See PAINTING AND SCULPTURE.

ALUMINUM. The production of aluminum in the United States in 1913 was 72,379,090 pounds, compared with 65,607,000 pounds in 1912. The production in 1913 was the largest in the history of the industry, which had shown great and consistent increase since 1883, when the production was first begun. There was exported aluminum with a value of $966,094 in 1913, compared with a value of $1,347,621 in 1912. One of the most important items in relation to the industry in 1913 was the continued progress on the project of the Southern Aluminum Co. near Whitney, N. C., but construction work was suspended in 1914 on account of financial difficulties due to the war. The plans of the company contemplated the erection of a dam approximately 1200 feet long and more than 200 feet high. During the early stages of the manufacturing of aluminum by this plant the alumina will be imported, as the reduction plant for making the metal will be ready to operate before the laboratory in which the pure alumina is to be made is complete. Imported bauxite may be used during the early stages of the enterprise, or at least until an adequate supply of the proper ore is located in the United States. At the beginning only ingot metal will be made, but it is very likely that in time wire, vessels, and other finished forms will be manufactured.

In 1913 the Aluminum Company of America pushed exploratory work on Little Tennessee River near the boundary between Tennessee and North Carolina with a view to the final selection of two dam sites, and in 1914 started a small plant at Maryville, Tenn. At the plant of this company at Massena, N. Y., extensive additions and improvements were made in 1913. The foil mill of this company began operations early in 1914 and found a wide market for its products owing to the cessation of imports of aluminum occasioned by the European war.

The United States Tariff Act of 1913 placed a duty of two cents a pound on alumina scrap and alloys and three and one-half cents a pound on aluminum in the form of plates, strips, bars, sheets, and rods. This caused a general reduction of price for the metal in the United States. The average price of metallic aluminum in New York City varied from $26\frac{1}{8}$ cents per pound in January, 1913, to $19\frac{9}{10}$ cents per pound in December. In 1914, the average price ranged from 18.81 in January to 18.96 cents a pound in December, with an average for the year of 18.63 cents.

Imports of aluminum into the United States during the first 10 months of 1914 were 14,398,031 pounds, compared with 20,775,103 pounds in the corresponding period of 1913.

WORLD'S CONSUMPTION OF ALUMINUM

(Metric Tons of 2204.6 lbs. avoirdupois.)

(From statistical report of the Metallgesellschaft, Frankfurt am Main)

	1912	*1913*
United States *a*	29,800	32,800
France	6,000	7,000
England	4,000	5,000
Italy	1,000	1,000
Other countries	22,100	21,000
Totals	62,900	66,800

a U. S. Geological Survey.

WORLD'S PRODUCTION OF ALUMINUM

(Metric Tons of 2204.6 lbs. avoirdupois.)

(From statistical report of the Metallgesellschaft, Frankfurt am Main)

	1912	*1913*
United States	19,500	22,500
Canada (exports)	8,800	5,900
Germany Austria-Hungary Switzerland	12,000	12,000
France	13,000	18,000
England	7,500	7,500
Italy	800	800
Norway	1,500	1,500
Totals	62,600	68,200

The use of aluminum was being extended on a large scale in the construction of welded tanks, cooking vats, and vessels employed by brewers, preserve manufacturers, fat recoverers, and in similar industries where a metal that will conduct heat, will not corrode, and is not poisonous is essential. An important process for extracting aluminum from its ores was patented in 1913 by Alan Kissock. Charles Martin Hall, inventor of the electrolytic process for the manufacture of aluminum, died on Dec. 27, 1914. See BAUXITE; CHEMISTRY, INDUSTRIAL.

AMERICAN ASSOCIATIONS AND SOCIETIES. For any organization whose official title begins with the word American, see under the specifically descriptive word in that title.

AMERICAN COMMISSION FOR RELIEF IN BELGIUM. See RELIEF FOR WAR VICTIMS.

AMHERST COLLEGE. An institution for higher learning, founded in Amherst, Mass., in 1821. There were enrolled in the several departments of the university in 1914, 414 students, the faculty numbering 43. During the year Professor Grosvenor, who held the chair of Modern Government and International Law, resigned; Raymond G. Gettell, M.A., was appointed lecturer in Social and Economic Institutions; Professor Frederic L. Thompson, the head of the History Department, was given leave of absence for a year, and Dr. Anson Ely Morse, formerly of Marietta College, acted as lecturer in history. The only noteworthy benefaction received during the year was one of $100,000 to establish the George D. Olds Professorship. The productive funds of the college amounted in 1913–14 to $2,776,452, and the gross income to $224,822. The library contains 107,795 volumes. The president is Alexander Meiklejohn.

AMPHOTROPIN. Chemically hexamethylene-tetramine camphorate; it has the chemical formula $((CH_2)_6N_4)_2.C\,H_{14}(COOH)_2$. The drug is prepared by chemical inter-action of hexamethylene-tetramine and camphoric acid and is claimed to possess the therapeutic quality of both these drugs without producing gastric disturbances. It acts as a urinary antiseptic, increases diuresis and uric acid elimination, and is said to promote the regeneration of epithelium. Amphotropin is a light, white crystalline powder almost insoluble in ether and benzene, but soluble in water, alcohol, and chloroform. The watery solution has an acid reaction. The drug is recommended in infections in the urinary tract, especially in connection with surgical treatment.

ANÆSTHESIA. A new method of rectal anæsthesia was introduced by Gwathmey of New York in 1914. Under the old method ether was sprayed into the rectum as vapor, and while a satisfactory anæsthesia was obtained, the local after effects were so disagreeable that the procedure was soon abandoned. Gwathmey endeavored to overcome these disadvantages by injecting a mixture of oil and ether, the oil being designed to obviate irritation. It seemed probable, however, that this method would prove unacceptable in the great majority of cases for reasons enumerated below. To many nervous and high-strung patients the procedure with its subsequent proctoscopic examinations possesses so many æsthetic objections that anæsthesia is impossible or brought on only after an unduly prolonged period. During the induction period distressing sensations such as cramps, pressure, and distention in the lower bowel are a further objection. There is also the impossibility of regulating the amount of ether absorbed and the frequent necessity of quickly emptying the lower bowel when anæsthesia becomes dangerously profound. Recovery from the anæsthesia is apt to be very much delayed. In spite of these objections the method presents many advantages. It frees the patient from strangling and the irritating effects of concentrated vapor on the respiratory passages and gives a clear field for the surgeon in operative procedures about the head and neck.

PARAVERTEBRAL ANÆSTHESIA was advocated by Juraaz, who used it in debilitated subjects to whom general anæsthesia was dangerous. Instead of introducing the anæsthetic into the spinal canal, he injected it into the posterior spinal nerve roots on each side from the sixth dorsal to the first lumbar vertebra. Anæsthesia was complete in 10 minutes and there was no operative shock. By this method operations upon the gall-bladder and bile ducts were done, and while the technic is somewhat tedious, the writer believes it may have a life saving value in cases where general anæsthesia cannot be borne.

ANOCI-ASSOCIATION. This method of preventing surgical shock attracted a great deal of comment, mostly favorable, on the part of surgeons during 1914. The method is a combination of local and general anæsthesia as well as the guarding of surgical patients against alarming suggestions and harmful mental impressions. The process consists essentially in an injection of morphine and scopolamin some time previous to the operation; the selection of the safest general anæsthetic possible (nitrous oxide with oxygen being generally preferred); the complete blocking of the nerves supplying the field of operation by the injection of novocain; and finally the infiltration of all tissues which may have been injured by the necessary surgical procedures with a solution of quinine and urea hydrochloride. By these means the patient enters the operating room in a tranquil state of mind, is safeguarded against accidents or consequences of ether anæsthesia, and suffers little, if any, pain. Crile's theories of psychic trauma and its profound consequences were not unreservedly accepted, but the practical application of his method resulted in a diminution of suffering and a higher percentage of recoveries from severe operations. Consult Crile and Lower, *Anoci-Association*. (Philadelphia, 1914.)

LOCAL ANÆSTHESIA is coming more and more into favor, particularly with the French surgeons. At a late session of the *Société de Chirurgie*, Professor Reclus, who originated this mode of anæsthesia 27 years ago, recalled that he had at that time reported 111 operations done under cocaine. Since the discovery of novocain the method has become a great deal safer. Reclus does all kinds of abdominal operative work, even resections of the intestine, under local anæsthesia. Chaput, Quénu, Tuffier, Lejars, Walther, and other well-known surgeons perform practically every variety of operation by this method, according to their statements.

ANARCHISTS. See SOCIALISM.

ANGLICAN CHURCH. See ENGLAND, CHURCH OF.

ANGOLA. A Portuguese West African colony, with a coast line of over 1000 miles. It is divided into six districts—Congo, Loanda, Benguella, Mossamedes, Huilla, and Lunda. The total area is estimated at nearly 500,000 square miles, and the population at over 5,000,000. The capital is St. Paul de Loanda. The chief products are coffee, rubber, wax, sugar, vegetable oils, coconuts, ivory, oxen, and fish. The rubber supply steadily decreases. The new Lobito-Katanga Railway, 323 miles of which were open to traffic in 1913, was expected to develop the copper industry. In 1910 the imports were valued at 6,022,294 milreis, and the exports at 3,311,863; transit 326,349. The trade for 1912 is unofficially reported, exclusive of Congo, at £1,068,200 imports, and £1,394,200 exports. The trade is principally with Portugal. The colony is administered by a governor-general.

According to English dispatches, an attempt was made by German emissaries, late in 1914, to stir up revolution in Angola, and considerable alarm was felt in Portugal for the security of the colony.

ANNAM. A French protectorate included in French Indo-China (q.v.).

ANNIVERSARIES. See EXPOSITIONS.

ANOCI-ASSOCIATION. See ANÆSTHESIA.

ANTARCTIC EXPEDITION, AUSTRALIAN. See POLAR RESEARCH, ANTARCTIC.

ANTARCTIC EXPLORATION. See POLAR RESEARCH, ANTARCTIC.

ANTHROPOLOGY. ANTIQUITY OF MAN AND PHYSICAL ANTHROPOLOGY. In 1913 the Piltdown find divided physical anthropologists into hostile camps—one side contending that the skull discovered had a capacity of about 1076 cc., while the other advocated the view that it attained the figure of 1500, i.e. that of modern European skulls. In 1914 Messrs. Dawson and Smith Woodward, the discoverers, published additional data (*Quar. Journ. Geol. Soc.*, LXX, April), admitting a minor error in reconstruction, but adhering to a very low estimate, but little in excess of that originally made. The nasal bones subsequently found at the Piltdown site are described as resembling those of existing Melanesian and African races rather than conforming to the Eurasian type. The canine discovered by Father Teilhard in August, 1913, is larger than any human canine previously found, and illustrates the rule of mammalian paleontology that the permanent teeth of an ancestral race correspond more closely with the milk-teeth than with the permanent teeth of its modified descendants. In the gravel bed of the site four layers are now recognized. The uppermost deposit of surface soil contains pottery and flint tools. Below it is undisturbed gravel ranging from some centimeters to a meter in thickness. There a rude paleolith of Chellean type was unearthed. The third bed contained supposed eoliths, one clearly worked flint, all the fossils but one, and the human remains under discussion now commonly referred to as *Eoanthropus dawsoni*. The lowest stratum was not fossiliferous, and no implement has been reported from it.

In March, Dr. Hans Reck made a preliminary report of a possibly significant discovery made by him in the course of a geological expedition in northern German East Africa. On the eastern margin of the Serengeti steppe he was able to distinguish a series of five deposits corresponding to climatic changes. In the second lowest horizon a human skeleton was found practically complete. It bore the same relation to the stratified bed as the other mammalian remains, and like them was dug out of the hard clay tuff with hammer and chisel. The human remains are thus coeval with the deposit, and the possibility of an interment seems excluded. An estimate of the age would be premature prior to more thoroughgoing geological investigation, but Dr. Reck is convinced that the skeleton antedates the alluvial or recent period. From a photograph MacCurdy, reporting the case (*Science*, July 3), infers that the affinities of the East African skeleton are with Aurignacian rather than with Neanderthal man.

Of the greatest importance for all students is the standard work published by Prof. Rudolf Martin, *Lehrbuch der Anthropologie*, which for the first time outlines in systematic fashion the methods and technique of physical anthropology. See GEOLOGY.

GENERAL ETHNOLOGY.

The attempt to synthetize, which a few years ago seemed completely swamped by interest in concrete data, now makes itself felt in every field of anthropological work. At the suggestion of Dr. Goldenweiser and under the editorship of Father Schmidt, *Anthropos* has begun an international symposium on "Totemism," of which the contributions by Swanton and Wundt have already appeared, the remainder being apparently delayed by the war. Of wider scope as to subject, but limited to American authorship, is a symposium on the principal phases of American ethnology, summarizing the present status of knowledge as to Religion, Social Organization, Material Culture, Ceremonialism, Mythology, Linguistics. This collection of essays was announced for simultaneous issues of the *American Anthropologist*, and the *Journal of American Folk-Lore;* the July-September number of the *Anthropologist*, containing Swanton and Dixon's "Primitive American History," Holmes's "Areas of American Culture Characterization Tentatively Outlined as an Aid to the Study of Antiquities," and Wissler's "Material Cultures of the North American Indians."

Interest in the fundamental meaning of relationship terms has been reawakened by Rivers's *Kinship and Social Organization* (London, 1914). Rivers attacks Kroeber's view that relationship terminology is primarily a matter of linguistics and psychology. He contends, on the contrary, that it reflects, both in its general character and its details, social institutions, among which forms of marriage have played an important, though not an exclusive, part. Instead of Morgan's two types of kinship terminologies, the classificatory and the descriptive, Rivers distinguishes three distinct forms: the classificatory, our own, and the descriptive. The classificatory system he derives from the institution of exogamy, our own from the family in the customary sense of the term, and the descriptive (for which the Celtic, Scandinavian, Semitic, Shilluk, and Dinka nomenclatures serve as illustrations) from the extended or patriarchal family (*Grossfamilie*). The term "descriptive," which Morgan applied to our own system, seems inappropriate since in our customary nomenclature we no more define relatives by description than the users of classificatory systems. Rivers insists on the failure of psychological grounds to account for features of kinship terminology that become at once intelligible as reflections of social usages. He thus supports one of Morgan's basic assumptions, incidentally pointing out that McLennan, the principal one of Morgan's contemporaneous opponents, also recognized sociological causes, though the particular causes suggested by him differed from Morgan's. On the other hand, Rivers differs from Morgan not only in the classification of nomenclatures, but also in another important point. While Morgan argued from the Hawaiian system to a hypothetical stage of consanguine marriage corresponding to this, in his opinion, most primitive nomenclature, Rivers holds that the system represents a late stage in the development of the classificatory system; and though at this late stage the nomenclature may have reflected promiscuous marital relations there is no evidence that promiscuity was ever the ruling principle of human society.

The school of Graebner, Foy, and Ankermann, which explains all cultural similarities by historical contact, has won a number of adherents, while probably a majority of working ethnologists remain unconvinced so far as the cultural relations of distant continents are concerned. Among the most active defenders, though by no means a slavish disciple, of the "culture-historical" school is Dr. Rivers. In a paper on "The Contact of Peoples" (*Essays and Studies Presented to William Ridgway*) he has made the suggestion that deep and far-reaching changes of culture may be effected by relatively small bodies of wandering people provided their culture embodies elements that seem great and wonderful to the tribes among which they settle. This idea is of some importance for the Graebnerian point of view since it does away with the necessity of assuming vast movements of population and concomitant racial mixture on a large scale. From another starting-point Father Schmidt has brought reënforcements to the historical school by undertaking an intensive ethnographical survey of South America, from the Graebnerian point of view.

While Rivers has given a hypothetical interpretation of the mechanism of cultural transmission, a study of the psychological processes actually found in a concrete case of diffusion has been produced by Radin in "A Sketch of the Peyote Cult of the Winnebago: A Study in Borrowing" (*Journ. of Religious Psychology*, 1914, pp. 1–22). Radin shows clearly that what happened was the automatic organization of the new society in conformity with the norm already established among the Winnebago. The only really new thing introduced was the peyote itself, with its ceremonial eating and consequent physiologico-psychological effects. A similarly stimulating study by the same author (*Proc. State Hist. Society of Wisconsin* for 1913, p. 137, et seq.) deals with "The Influence of the Whites on Winnebago Culture." This influence proves to have been, apart from material life, essentially indirect. Intermarriage with whites tended to alter aboriginal rules of descent. The new conditions led to the drawing together into one unit of all the distinct villages, and accordingly to a leveling of intra-tribal differences. Finally, contact between distinct tribes was either established or intensified by the coming of white traders.

In the field of mythology Waterman has re-attacked the problem of "The Explanatory Element in the Folk-Tales of the North American Indians" (*Journal of American Folk-Lore*, 1914, pp. 1–54). He regards folk-tales as having developed independently of the observation of cosmic phenomena, the interest of primitive man centring in his immediate surroundings. Even where natural phenomena do figure in mythology, the explanations appear to be secondary additions to preëxisting tales. This comes out most clearly in the case of widespread tales, since it is obvious that explanatory elements are freely incorporated or dropped in the several versions of the same story. In general, then, the plot is the basic thing, the explanation subordinate and superadded.

Among the general works on primitive religion may be mentioned Frazer's *The Belief in Immortality; and the Worship of the Dead*, vol. i, and E. Sidney Hartland's *Ritual and Belief*.

America. There has been a strong tendency to establish genetic relationship between languages generally regarded as distinct and thus to simplify the linguistic classification of the North American aborigines. Thus, Sapir (*American Anthropologist*, vol. xv, pp. 617–646) has come to the conclusion that two Californian languages, hitherto regarded as representing distinct stocks, Yurok and Wiyot, are not only genetically connected with each other, but also with the Algonkian family. The relationship is admittedly remote, and the question remains open, whether Yurok and Wiyot together form a group as contrasted with the languages commonly classed as Algonkian, or whether Wiyot, Yurok, and Algonkian proper represent three main branches of a single family. Sapir's conclusions have been vigorously challenged by Michelson (*American Anthropologist*, vol. xvi, p. 361, et seq.), who insists that Sapir has not compared corresponding morphological elements and that consequently the similarities noted are accidental. In California, Dixon and Kroeber (*ib.*, pp. 647–655) have tried to reduce Wintun, Maidu, Yokuts, Miwok, and Costanoan to the position of branches of the "Penutian" family, and similarly unite Shasta, Chimariko, Karok, Pomo, Esselen, and Yuman under the caption of "Hokan family." This classification, if accepted, will reduce the number of Californian stocks from twenty-one to twelve. In another area a synthesis of even greater significance has been attempted by Sapir, who adduces phonological and morphological evidence in support of the oft-asserted but never quite proved unity of Shoshonean and Nahuatl ("Southern Paiute and Nahuatl, a Study in Uto-Aztekan," *Journal de la Société des Americanistes de Paris*, x, 379–425).

Of the works and papers dealing with the ethnography of the American aborigines only a few can find mention here. Among these *The Ammassalik Eskimo*, edited by Thalbitzer and uniting papers on the natives of East Greenland by the editor, Holm, Hansen, et al., occupies a prominent place. Thalbitzer finds among the Ammassalikers evidence for the general homogeneity of Greenland culture. At the same time they represent the most complex of Eskimo communities, owing to the fusion of two streams of culture or immigrants, the one from the west coast by way of the south, the other from the north. Evidence for the latter is found in the presence of Arctic features in the sub-Arctic latitude of Ammassalik. The ice-sealing and hunting methods followed here are even in detail precisely those of northwestern Greenland, while they are unknown in the south. Another high-Arctic complex includes the use of dogs and sledges. On the west coast, south of Holstenborg, these are not found since the snow does not freeze so hard that it is practicable to drive on sledges over great distances. This would of course apply to corresponding stretches of the east coast, and the presence of the dog and sledge in spite of their climatic unfitness indicates that they have persisted from a time when they were used in higher latitudes, especially since the dogs resemble the northwestern breed and are equipped with a similar harness. On the other hand, the extensive reliance on caplin fishing during the hardest winter period, as well as many minor features, point with equal force to influences from a southwestern source. In addition to these views on the Eastern Greenlanders, Thalbitzer elucidates his position with regard to the migrations of the Eskimos as a whole. He holds that the original home of the Greenlanders is to be sought in the Central Eskimo region, that is, in the northern and western part of Hudson Bay, from which they wandered northward and eastward to their present habitat. However, he rejects the theory that this central region was the original starting-point of all the Eskimos. Similarities between the Eskimos of Greenland and those of Alaska, as well as between the common Eskimo culture and that of such Asiatic peoples as the Chukchee, suggest that the pristine Eskimo lived about Bering Strait, coming originally from the coasts of Siberia.

A contribution to the study of Eskimo ceremonialism is supplied by Hawkes's *The Inviting-in Feast of the Alaskan Eskimo*. Stefánsson's *The Stefánsson-Anderson Arctic Expedition of the American Museum*, vol. i, comprises his preliminary ethnological report on the Eskimo of the Coronation Gulf and Mackenzie River districts.

"The Influence of the Horse in the Development of Plains Culture" (*Amer. Anthrop.*, vol. xvi, p. 1, et seq.) has been suggestively discussed by Wissler. The conclusion reached is that the culture found in this area by early observers in the eighteenth and beginning of the nineteenth centuries existed in its elements prior to the introduction of the horse, but was greatly intensified by it, and the typical combination of traits was diffused over a wider area than might otherwise have been the case. In the transmission of the horse culture the Shoshone and related Comanche probably played the principal part.

In an article on "The Cheyenne Medicine Lodge" (*Amer. Anthrop.*, vol. xvi, p. 245, et seq.) Grinnell refutes the belief that the Sun Dance is a ceremony of self-torture. Among the Cheyenne, at all events, it is essentially a prayer for food supply, and torture accompanied it because the festival was considered a favorable time for any performance involving the supplication of supernatural powers. Dealing with the same ceremony among the Crow (*Journ. Amer. Folk-Lore*, vol. xxvii, p. 94, et seq.), Lowie points out that it is a festival that purports to effect revenge on the enemy, but essentially serves the purpose of a popular free show.

Elements of a culture interesting from its transitional nature are described in Skinner's *Political Organization, Cults, and Ceremonies of the Plains-Ojibway and Plains-Cree Indians.* Both these tribes belong to the Algonkian family and share many Eastern Woodland features with their eastern kinsmen, but both have become affected by Plains influence and illustrate the blending of two distinct cultural streams. Thus, both have the police for the buffalo hunt and the Sun Dance, features highly characteristic of the Plains, but also the Midewiwin ceremony of the Central Algonkian. A Cannibal cult with clownish practices is very closely related with a corresponding Assiniboine usage, but there is a possibility of Iroquois influence. The Plains-Ojibway have a social organization similar to that of the Woodland Ojibway, being organized in totemic gentes, but among the Western Cree no sure evidence of such social groups has been discovered. In another paper dealing with the "Social Life and Ceremonial Bundles of the Menomini Indians," Skinner gives an account of a typical Central Algonkian tribe. Several contributions to our knowledge of the Algonkian Woodland area have also been made under the auspices of the Geological Survey of Canada. These include: Speck's "The Double-Curve Motive in Northeastern Algonkian Art"; Radin's "Some Myths and Tales of the Ojibwa of Southeastern Ontario"; and Mechling's "Malecite Tales."

The Pueblo area has received attention in Dr. Hough's archæological report on the "Culture of the Ancient Pueblos of the Upper Gila River Region," while a most convenient summary of what is known of ancient Mexican and Maya culture is supplied by Joyce's "Mexican Archæology."

AFRICA. Professor Westermarck, whose theoretical works on the development of human marriage and ethics have made him world-famous, has at last appeared in the guise of a field-ethnographer, his book on *Marriage Ceremonies in Morocco* containing part of the information secured during a stay in northern Africa. The undrained region of German East Africa is described by Dr. Reche, who bases his paper, *Zur Ethnographie des abflusslosen Gebiets Deutsch-Ostafrikas*, on the records and specimens of the Obst expedition. He discovers several cultural layers corresponding to as many waves of migration. A primeval race of hunting Pygmies was subjugated or superseded by the horticultural Bantu, who in turn were followed by pastoral Hamitic populations. Last of all came the Masai, whose influence, however, has been largely external. N. W. Thomas, the Government Anthropologist in Nigeria, continues his *Anthropological Report on the Ibo-speaking Peoples*, which embodies much linguistic and ethnographic information.

Since the Bushmen and Pygmies are both commonly regarded as part of the autochthonous African population, their genetic relationship, as well as the relationship of their several subdivisions to one another, constitutes a problem of basic importance. It has been attacked by Kuhn (*Zeitschrift für Ethnologie*, 1914, pp. 116–136), and Von Luschan (*ib.*, pp. 154–176). Kuhn, who had occasion to observe both Bushmen of southwest Africa, and Babinga Pygmies of the Sanga River, Kamerun, is impressed with the resemblance of the two groups and postulates a close connection. The stature of the Sanga River tribes averages 154 cm. for the males, 146.9 cm. for the females. In skin color they also resemble the Bushmen, though the latter are of somewhat lighter shade; prognathy is developed in equal measure, and the nose is sharply divided from the forehead. On the other hand, there are a number of significant differences. The Babinga are much heavier and stronger, the cephalic index is higher (79.44 against 76.3 for men; and 77.96 against 73.5 for women), and the nose is excessively wide and thick, with a relatively high bridge. Von Luschan also strongly supports the theory of the unity of the Bushmen and Pygmy race; points of difference are explained as largely due to Hottentot influence. Among the traits common to both he enumerates the short stature, with disproportionately long trunk as compared with the short extremities; the wrinkled skin; spirally coiled hair; convex upper lip; and tremendous bigonial breadth, giving a rectangular character to the face. The points of difference include the form of the ear, which is less peculiar among the Pygmies, who rarely lack the lobe; the color of the skin has a far greater range of variation among the Pygmies, being sometimes of a pale reddish-yellow and sometimes sooty black.

OCEANIA AND ASIA. One of the events of the year is the publication of *Native Tribes of the Northern Territory of Australia*, by Prof. Baldwin Spencer, whose work on the aborigines of Central Australia, issued fifteen years ago in collaboration with the late Mr. Gillen, roused as much discussion as has ever been evoked by a purely descriptive ethnographical monograph. Comprising in a rapid survey a considerable number of distinct tribes, Professor Spencer devotes a large section of his new book to the Kakadu of the Alligator Rivers region, as well as to the Melville and Bathurst Islanders. The latter are physically the best developed of Australian natives, many of the men attaining a stature of five feet ten, or even six feet; in marked contrast, to be sure, are the stunted figures of their women, whose height seldom exceeds four feet eight. The hair varies considerably as to degree of waviness and curliness, but is never woolly. As in the case of the aborigines previously described, the terms "paleolith" and "neolith" seem quite inapplicable to the stone implements found in use. The nature of these seems to depend solely on the character of the available material: where only quartzite occurs, the Australian merely chips or flakes the stone, while if diorite can be secured he will grind it. Thus the same native may be found using implements which would be assigned to distinct epochs by a European archæologist. The social organization of the tribes described varies remarkably.

While totemic groups occur throughout the territory, they often regulate marriage only as subdivisions of larger marriage-regulating units, and in other cases not at all. These larger units are usually the familiar eight classes of Central Australia, divided between two exogamous moieties. However, the class and moiety system is absent among the Kakadu and the Islanders, the latter being organized in purely local groups. Among the Waduman and related tribes there is the anomalous combination of paternal descent of the class name with maternal descent of the totem. As elsewhere in Australia, the admission to an adult man's status figures prominently among ceremonial procedures; among the Kakadu, indeed, there are no less than five grades of initiation. The Kakadu and the Island tribes differ markedly from most of the other natives in lacking both the circumcision and subincision features that characterize initiation in the central area. The Islanders' ceremony is unique in having women admitted to participation, since elsewhere in Australia they are rigidly debarred from attending even as spectators, on pain of death. The interment ritual of Bathurst and Melville Island is likewise highly distinctive. Tree-burial is unknown, bodies are always buried in the ground, and grave posts, curiously carved and decorated with paint, are set round the remains. In decorative art these Islanders show so little kinship with other Australians as to suggest outside influence from the northeast. The Kakadu are remarkable for the excellence of their bark and rock drawings, in which the fauna of the region is often represented with great realism.

A comprehensive work on the material culture of the region, with special attention to the substances used, has been published by the pioneer traveler Finsch under the caption of *Südseearbeiten*. Much-needed information on the New Hebrides is supplied by Speiser in his *Südsee-Urwald Kannibalen*. His most important discovery, if corroborated by further research, is that of a pygmy race, clearly distinct from, though largely blended with, the taller Melanesian populations. The men average only 152 cm. in stature, the women 144 cm. The hair is frizzy and of a dark yellowish-brown color; in contrast to the Melanesians the beard is but slightly developed. In point of skin color the Pygmies are lighter than the taller tribes, and the skull is markedly less theromorphic. Culturally, the Pygmies also present notable peculiarities. Unlike their neighbors they use feathered arrows, do not perforate the septum of the nose, or practice any other bodily deformation except for occasional piercing of the ear lobes, and in their social life they do not carry out the rigid separation of the sexes so noticeable in the tribal life of Melanesia. While they subsist only in small measure on yams, they not only cultivate taro, but also have a knowledge of irrigation. A welcome supplement to Speiser's book is constituted by the French missionary Suas's "Notes ethnographiques sur les indigènes des Nouvelles Hebrides" (begun in *Anthropos*, ix, pp. 241–260).

The social and religious conceptions of the Marshall Islanders, another practically unknown subject, has at last found treatment in Erdland's *Die Marshall-Insulaner*. Erdland discovered an exogamous system with maternal descent and traces of totemism. The kinship system is of the so-called classificatory type, more particularly, it seems to be of Hawaiian form, and the occurrence of cross-cousin marriages is especially suggestive in view of their wide distribution in Melanesia.

Finley and Churchill describe the ethnology and linguistics of *The Subanu*, a tribe inhabiting a district of Mindanao. Anthropological work in Nias, near Sumatra, had practically lapsed since Modigliani's book of more than two decades ago, but is now being resumed by a Dutch scholar, Kleiweg de Zwaan, who has issued two volumes dealing with the primitive medical practice and physical anthropology of the natives: *Die Insel Nias bei Sumatra*. In Celebes the Sarasin cousins find a worthy continuator of their researches in Professor Grubauer, who has written a profusely illustrated book, *Unter Kopfjägern in Zentral-Celebes*.

MEETINGS, EXPEDITIONS, PERSONALIA. The one meeting of overshadowing importance for which preparations had been made throughout the year, the nineteenth International Americanist Congress, which was to assemble in Washington, D. C., October 5–10, had to be postponed indefinitely on account of the European War. The American Anthropological Association met in Philadelphia, December 28–31, in conjunction with Section H of the American Association for the Advancement of Science, and the American Folk-Lore Society.

The Bureau of American Ethnology continued to support work on Algonkian linguistics by Dr. Michelson, and on Indian music by Miss Densmore, who visited the Ute Indians; Professor Boas visited the Kootenay for linguistic studies. The Geological Survey of Canada equipped expeditions to the Central and Labrador Eskimo (Mr. Hawkes); to the Iroquois (Dr. Goldenweiser); to the Eastern Dakota (Mr. Wallis). Under the auspices of the American Museum of Natural History, Dr. Wissler and Mr. Murie investigated the ceremonial life of the Pawnee; Dr. Goddard visited the San Carlos Apache; Dr. Spinden undertook a reconnoissance of Central American antiquities; Mr. Nelson resumed archæological work in the Galisteo Basin; Mr. Skinner began an investigation of the Southern Siouan tribes and the Eastern Dakota; and Dr. Lowie commenced work on the Northern Paiute. Under the leadership of Dr. Farabee, the University of Pennsylvania Museum maintained explorations in Southern British Guiana and Northern Brazil, while Mr. M. R. Harrington spent the summer among the Ponca and examined Oklahoma rock-shelters. In the interests of the Heye Museum, Professor Saville conducted archæological work in Ecuador and Colombia. The Peabody Museum of Harvard supported a Central American expedition by Messrs. Merwin and Bishop; archæological excavations in Nebraska by Mr. Stearns.

Outside of America, Sir Aurel Stein has resumed archæological researches in Central Asia and westernmost China; Miss Czaplicka visited the Tungus and the Ostiak of the Yenisei River; Dr. Preuss is engaged in archæological and ethnological work in Colombia; Dr. Rivers utilized his attendance at the Australian meeting of the British Association for the Advancement of Science for supplementary work on Melanesian ethnology. See PEABODY MUSEUM.

ANTIGUA. A West Indian island, constituting, with Barbuda and Redonda, a presidency of the Leeward Islands colony. The area of Antigua is 108 square miles, with a population of 31,394—1099 white, 26,458 black, 3927 colored. Barbuda (871 inhabitants) and Redonda (120) have a total area of 62½ square miles. The capital, St. John, is also the capital of the colony. Antigua was discovered by Columbus in 1493, and named by him after a church in Seville. It is subject to frequent droughts, there being no rivers in the island. The chief products for export are sugar, cotton, and pineapples. The output of sugar in 1913 was 11,696 tons; of molasses, 5267 puncheons; of cotton, 444,826 pounds. The total imports for 1912 were valued at £168,274 (£181,331 in 1911); exports, £164,968 (£151,064). These figures are exclusive of internal trade. Total tonnage entered and cleared, 653,355, of which 582,723 tons were British. Revenue, 1912–13, £53,489 (£52,292 in 1911–12); expenditure, £53,193 (£53,652). The total customs revenue in 1912–13 was £31,961. The public debt stood in 1912 at £123,500; amount to credit of sinking fund, £42,920. Antigua is under the direct administration of the governor of the colony. See LEEWARD ISLANDS.

ANTIMILITARISM. See ITALY, *History;* JAPAN; and SOCIALISM, *passim.*

ANTITOXIN. Schick and his associates in Von Pirquet's clinic in Vienna contributed valuable information as to the dosage of antitoxin. To obtain the exact amount of antitoxin needed for neutralizing diphtheritic poisons, they find it necessary to calculate the dose according to the body weight. The best immunizing effect was derived from a dose of 100 units per kilogram of the patient's weight. When this quantity was used a subsequent injection 24 hours later did not increase the immunizing effect. Schick's observations indicated that repeated injections of the serum were superfluous and unwarranted. Even in the severest cases, if a dose of 500 units per kilogram be injected immediately the greatest effect possible will be obtained. Subsequent injections of antitoxin after 6, 12 or 24 hours are unnecessary. If the conclusions drawn by Schick are correct, it is obvious that the practitioner will be provided with a precise method of treating diphtheria patients. It would seem that the enormous doses sometimes given of 100,000 units, or more, of antitoxin are wholly unnecessary, involving large expense and much inconvenience to the patient, especially where repeated injections have to be given.

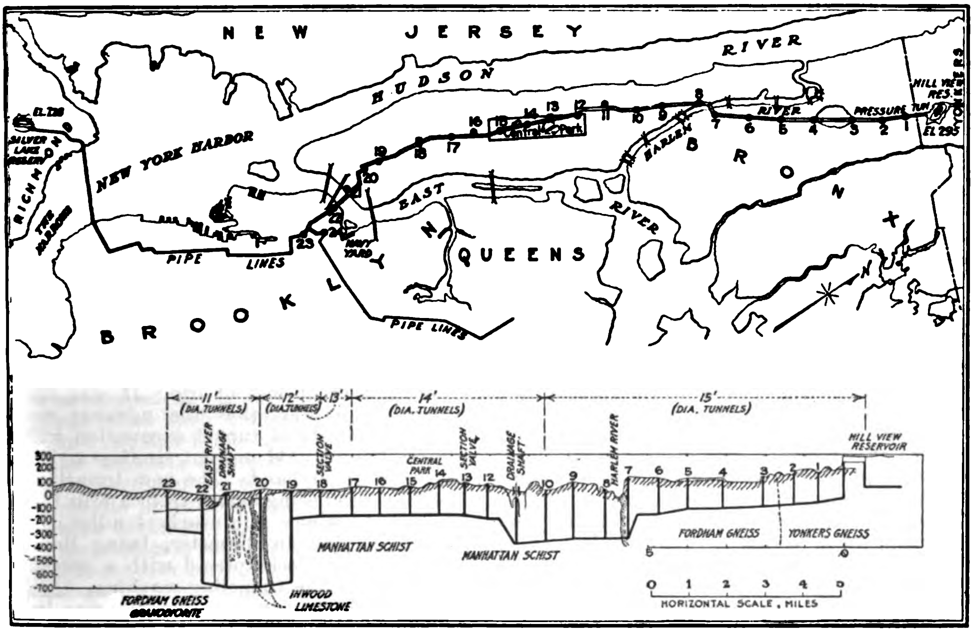
The presence of natural antitoxin in the blood of certain individuals had long been suspected. It was only recently, however, that Romer discovered a method by means of which it is possible to determine accurately the precise amount. His method consists of injecting into guinea-pigs, minute quantities of diphtheria toxin and the serum to be tested until a balance is secured, the diphtheria toxin completely neutralized, and no necrosis takes place. By this method Otto has tested the serum of a large number of people with interesting results. He found that there was a large amount of antitoxin in the blood of persons such as doctors and nurses who had been in close contact with diphtheria cases, while others had much less. He found also that diphtheria carriers, whether they had suffered from the disease or not, contained more antitoxin in their blood than patients who had recently recovered from an attack of diphtheria. Evidently the presence of the bacilli in the throat stimulates the production of a natural antitoxin, that is, it increases the immunity of the individual. It was also believed that antitoxin may be transmitted from the mother to the child. In the blood of 80 per cent of new-born babies it is found, but it soon disappears. The condition is one of relative immunity, and while it accounts for the resistance of many persons to the disease, will not render the use of antitoxin in diphtheria any less imperative. Antitoxin was given by intravenous injection during an epidemic of diphtheria in Bremen during the winter of 1913. This method was quicker in its results than the usual procedure, that of injecting the substance into the muscles. It was observed also that the effect was many times greater. Serum sickness was no more severe than with ordinary method. See DIPHTHERIA.

AOKI, SIUZO, Viscount. A Japanese diplomat, died Feb. 16, 1914. He was born in 1844, the son of a Japanese physician. After studying law and the political sciences in the University of Tokyo in 1868, he went to Germany to complete his education. Returning to Japan he entered the diplomatic service and in 1873 was attached to the Japanese Legation at Berlin as secretary. In the following year he was commissioned minister to Germany, being at that time only 30 years of age. He was the youngest diplomat ever appointed to the German Empire. In 1885 he left this post to become Vice-Minister of Foreign Affairs, and four years afterwards was raised to the rank of a viscount. After the retirement of Count Okuma, in consequence of an attack upon his life, Viscount Aoki became Minister of Foreign Affairs. He at once began negotiations for the revision of treaties with various foreign powers. This work was completed in 1891 and in the same year he retired from the Cabinet. This retirement with that of other members of the Cabinet was caused by a controversy which followed an attack upon the Czarevitch, afterwards Nicholas II of Russia, who was at that time traveling in Japan. One year later Aoki was appointed minister to Germany, and in 1894 received the additional post of minister to England as well. While minister to England he became acquainted with Baroness Elizabeth von Rahden, the widowed daughter of one of the proudest families of Pomerania, and the two became engaged, and shortly afterwards married. The announcement of their engagement and marriage aroused a storm of discussion in Germany, and the wedding is said to have been opposed by many persons of distinction in that country. About five years later Aoki was called home by the Emperor and was made one of the privy councilors. In 1905 he was appointed Ambassador to the United States and was the first Japanese ambassador to that country, as Japan had been previously represented only by a minister. He remained at Washington until 1909. As ambassador he was for the most part successful, but he was severely criticised in Japan for his failure to prevent President Roosevelt from sending the American fleet around the world in 1908. In some quarters of Japan this trip of the fleet was regarded as intended to have an effect on the warlike spirit of that country. On his return to Japan he continued to be one of the privy councilors, but held no official post thereafter.

APPLE SIRUP. See HORTICULTURE.

AQUEDUCTS. Except for the completion of a few notable structures, such as the Kensico Dam and Reservoir, and the distributing reservoir at Hill View, the great Catskill Aqueduct, which will supply New York with 500,000,000 gallons of water a day, was reaching its finishing stage. The 90-mile aqueduct had been virtually completed and the 12-foot tunnel several hundred feet below the surface of Manhattan Island and extending to Brooklyn had been excavated and lined, though the distributing equipment at the various shafts had not been installed. At several points along the line additional work on improvements remained to be effected, such as the change in the siphon, where it passes under the Hudson River at Storm King, but these details were essentially minor, and at short notice the aqueduct could be connected with the Croton supply system and any danger of failure of water supply to the City of New York on account of drought be eliminated.

An interesting development of the Catskill Aqueduct was the driving of a new shaft and tunnel, the former of 400 feet depth, and the latter of 900 feet in length, to supplement the existing Catskill Aqueduct on the west shore of the Hudson River at Storm King Mountain. This is a portion of the rock tunnel under the Hudson River, a type of work that can be successfully used only where the rock is solid and unyielding, and the concrete lining is added simply to make the rock more water-tight and to furnish a smooth surface for the flow of the water, as the pressure acting on the walls of the tunnel, which is 14 feet in diameter, has the pressure equivalent to a head of several hundred feet, and would of course break the concrete lining. Where the aqueduct passes under the Hudson River the rock tunnel had been driven to a depth of 1100 feet below the water surface. This connects with the shafts reaching to the surface. On the west side of the river, at a depth of about 228 feet below the water level, or 270 feet from the surface of the ground, connection is made with a tunnel extending westerly, which was tunneled under the solid rock under Storm King Mountain. The west shaft was sunk as a test shaft in order to determine the nature of the material likely to be encountered in the construction of the siphon, but as soon as the water-tight rock was developed it was used as part of the aqueduct to save the expense of sinking another shaft further west. This shaft was finished and newly lined, and when it was subjected to more water pressure, it was found that there was considerable leakage beneath the western shaft and the next shaft 125 feet west of it. When the tunnel was pumped dry it was found that there had been a yielding of the rock at certain points, and the concrete lining had been cracked to a very small degree, but sufficient to permit the escape of a quantity of water. While this was not particularly serious, it indicated a possible wasting that might increase, and accordingly it was determined to abandon the use of that part of the west shaft nearest the surface and a portion of the pressure tunnel. Accordingly it was decided to go back 900 feet into solid rock of Storm King Mountain, and make a shaft 400 feet in depth, and drive a longitudinal tunnel 900 feet, connecting with the tunnel under the Hudson River. The result of this will be to carry the aqueduct so far below the surface of the ground that no movement of the rock under the great hydrostatic pressure need be feared. Contracts accordingly were made in October providing for the completion of the work within one year. As the possibility of a shortage in the Croton supply might occur in

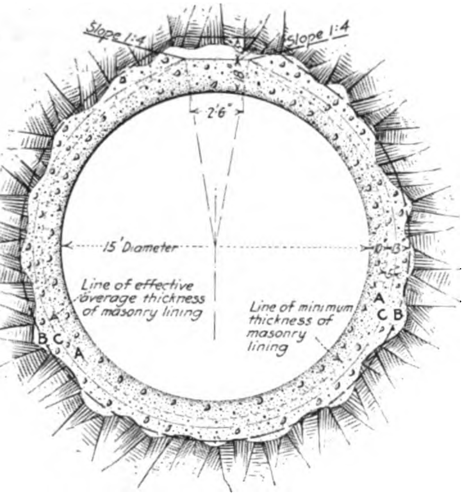


PLAN AND SECTION OF PRESSURE TUNNEL UNDER NEW YORK CITY.

From Engineering News.

the following year, it would be possible to use temporarily the Catskill Aqueduct with the old shaft.

Progress was made during the year with a novel plan of construction to carry a pipe-line from Brooklyn to Staten Island across the Narrows, the channel connecting the Upper and Lower Bays. A submarine pipe-line was adopted in preference to a tunnel, after the merits of both systems were thoroughly canvassed, and the decision was in favor of the former. The distance from shore to shore is about 10,000 feet, and this was being crossed with 36-inch cast-iron pipe laid in 12-foot sections with a carefully designed flexible joint. The depth of water in some places at the crossing is as great as 74 feet, and this together with the large number of passing ships presented no small amount of difficulty. A trench for the pipe was first dredged at the bottom, and then from a large scow, which carried a 60-ton structural steel cradle 180 feet in length, extending to the harbor bottom and carrying an inclined skidway, the pipe was slid into place, its joints being made above water on the scow, which was then moved forward so that the pipe would be lowered to rest in its proper position. The joint employed is a modification of the Duane joint, and resulted in a reasonable degree of water-tightness, through a method of construction evolved after elaborate testing. After the lead is poured into the joints hot, cold lead pellets are forced in through jib screw holes in the joint, increasing the amount of lead without destroying the flexibility and producing a joint which is not only tight, flexible, and strong longitudinally, but will stand considerable abuse. The type of joint used had never been employed before; so accordingly a certain section was submitted to both hydrostatic and air-pressure tests, which proved eminently satisfactory.


Slope 1:4
Slope 1:4
2'6"
15' Diameter
Line of effective average thickness of masonry lining
Line of minimum thickness of masonry lining
A
B
C
A
C
B

SECTION OF PRESSURE TUNNEL.
From Engineering News.

LOS ANGELES AQUEDUCT. An interesting failure of the steel pipe siphon of the Los Angeles Aqueduct, where it crosses the Antelope Valley about 100 miles northwest of Los Angeles, took place on the night of February 20. There had been three days of heavy rainfall and the two concrete piers which supported the siphon near the centre of the valley where the line crosses a ravine were undermined and fell on their sides. The siphon was ruptured so that the water flowed out under very high velocity, and immediately there followed a collapse of some 1000 feet of the line of pipe as the result of the pressure of the atmosphere. The collapse occurred in the upper half of the steel pipe, the lower half being buried in the ground. From a cylindrical cross section the line was changed to U-shape, and while at several points plates were torn and rivets sheared, the pipe in the main held up satisfactorily. The method of repair was about as novel as the accident itself. New plates to replace those torn were rolled, sheared, and punched, and transported by wagon 35 miles across the desert to their destination, and riveted into place. In the meantime new piers of concrete had been built, and when everything was in readiness, the water was turned into the line, and the head gradually increased until the pipe was forced by the pressure into its usual form. In this process none of the longitudinal seams were sheared, and but a small amount of calking of such seams was required. In some cases stretches of from 400 to 500 feet of pipe were restored to rotundity with no damage whatever. The entire repair, including cost of fitting in new plates, building cement piers, and providing against a repetition of the accident, did not involve an expense of more than $2200.

Of somewhat different nature from the aqueducts at New York and Los Angeles were the new intakes, which were being constructed to furnish additional supplies of lake water to Milwaukee and Cleveland. The latter construction will be recalled as a few years previously, when the tunnel for the aqueduct was being driven through a stiff clay containing marsh gas, there resulted a great loss of life. It was admitted probably, however, that the advance made in modern methods of tunnel excavation with boring machines would prevent similar accidents in the work under hand. The new tunnel, 3 miles in length, was being driven from a crib 1½ miles off shore to a new crib nearly 4 miles off shore. It was 10 feet in diameter, being lined with large concrete blocks placed with a special erector following the tunneling machine.

CANADA. The city of Victoria was building an aqueduct supplied by a minor reservoir, 37 miles away, while the city of Winnipeg was engaged in a project to take the soft water of Shoal Lake, 95 miles to the east. Other Canadian cities were engaged in ambitious projects for the extension of their water supplies, as the rapidly growing populations made necessary such improvements. At Ottawa in particular there was much discussion during the year of new or improved water supply, on account of an increase in fire insurance rates. Financial conditions did not seem to permit of the construction of new aqueducts from distant sources of supply as proposed by engineers, and at the end of the year it was proposed to retain and increase the present unfiltered supply from the Ottawa River, building a high-pressure pumping station on Lemieux Island.

ENGLAND. The Metropolitan Water Board of London in 1914 let a contract for two storage reservoirs in the Thames Valley, near Laleham and Littleton, with an aggregate capacity of 7,000,000,000 gallons, and also contracts for a service reservoir at Shooter's Hill to contain approximately 1,000,000 gallons, and at Westerham Hill and Betsom's Hill, each to contain 300,000 gallons. A tunnel of 16 feet internal diameter, and lined with cast-iron segments, was driven through the clay under the Thames between Twickenham and Richmond, and at the end of the year the contractors were laying three lines of 36-inch pipe, and one line of 30-inch steel pipe. The aqueduct, which provides the city of Manchester, England, with the third installment of water from Thirlmere, was practically completed during the year, and the 30 siphons across the various valleys on the route were tested as well as the subway under the ship canal near Barton. The Manchester water works improvement included the construction of the Heaton Park Reservoir, and the completion of the inlet and outlet works, straining wells, etc. This reservoir when completed was to have a top water area of nearly 80 acres. See WATER PURIFICATION.

AQUITANIA. See SHIPBUILDING.

ARBITRATION, INTERNATIONAL. See INTERNATIONAL ARBITRATION AND PEACE.

ARBITRATION AND CONCILIATION, INDUSTRIAL. The exceptional unrest among the working classes in recent years has given rise to a considerable number of labor disputes, strikes, and lockouts. (See STRIKES AND LOCKOUTS.) Some means of obviating such interruptions in business and the attendant losses is one of the problems confronting society. Now it is coming to be generally recognized that much can be saved to both the employer, the employee, and to the public by means of conciliation and arbitration in industrial disputes. Especially from the point of view of the latter is this matter becoming of supreme importance. Because of the interdependence of the various industries members of any community are, to a greater or less extent, dependent on their transportation, lighting and other public utility corporations, and any interruption in the normal administration of the facilities operated by them works considerable hardship on the people. Furthermore, the public is learning that the consumers-at-large must ultimately pay by the advanced prices of commodities, and the increase of poor-relief. So there has been a growing conviction that some governmental machinery should be established to guarantee the continuance of industry pending the settlement of industrial disputes.

Australia and New Zealand have introduced systems of compulsory arbitration, but in the United States, however, there has been no body of public opinion to uphold such a means of settlement. The American Federation of Labor (q.v.) has openly expressed its objection to any such method, and in the hearings of the Industrial Relations Commission (q.v.) union men expressed themselves as opposed to arbitration in which an umpire is involved. The employers also were quite in agreement with this position, both contending that an outsider has not the requisite knowledge, and his decision is usually unsatisfactory. By the Newlands Act passed in 1913 a Federal Board of Mediation and Conciliation was established in the United States, and several commonwealths have similar commissions or have enacted provisions for arbitration.

Secretary of Labor Wilson in his 1914 report stated that it is the policy of the department to intervene in labor disputes only when called upon; it will, however, in critical situations, take steps on its own initiative.

As an instance of the huge sums saved through mediation, the Massachusetts Board of Arbitration and Conciliation stated in its annual report that twelve million dollars were saved through its efforts during 1914.

LEGISLATION. Alaska passed a most elaborate law relating to the arbitration of trade disputes. The Governor is enjoined to endeavor to settle by mediation, either personally or through a commission, disputes concerning wages, hours of labor, or conditions of employment which interrupt or threaten the interruption of business. In the event of the failure of such an effort, the Governor is to try to bring about arbitration by a board of three persons, one to be chosen by the employer, one by the union or unions concerned, and these two are to appoint a third. The majority of the conciliators may make a binding award. Hearings are to commence soon after the appointment of the third arbitrator and the award is to be made within thirty days, the status existing before the dispute to remain unchanged during arbitration. The award as well as the papers in the proceedings are to be filed with the district court; and, unless error is found, this decision shall be final and the parties are to abide by it. If, however, there is dissatisfaction with the ruling, for three months after it has been made—except on thirty days' notice—the employer is not to discharge men except for inefficiency, violation of the law, neglect of duty, or because fewer workers are required. On the other hand, the employees are not to stop work without good reason during the same time. Such an award is to remain in force for one year and unless set aside, no new arbitration on the same question can be obtained during that period. The arbitrators are empowered to administer oaths, to require the attendance of witnesses, and to demand that the necessary documents be produced. Their expenses and compensation are to be arranged for in the terms of the agreement to arbitrate. Provisions are included in the law which make possible appeal to the court on questions of law only.

Massachusetts amended her law governing the State Board of Conciliation and Arbitration so as to make investigations of labor troubles by the board dependent upon the inability of the parties to settle, or their refusal to submit the matters to arbitration. Experts to assist in the investigation may be employed and local boards of conciliation may be composed of three mutually agreed upon, as well as one representative each of the employer, employee, and the public.

PHILADELPHIA GARMENT MAKERS. A notable instance of the effectiveness of mediation was the agreement reached between the employers and the unions in the garment trades in Philadelphia during September. This action averted what promised to be a serious strike involving 6000 employees and 140 employers, the purpose of the strike being to secure the same standards for the smaller shops that the larger shops now have.

WESTERN LOCOMOTIVE ENGINEERS. After the members of the Federal Board of Mediation and Conciliation had reported that efforts in conference with representatives of the locomotive engineers and firemen of 98 railroads west of

Chicago had failed, President Wilson intervened and induced the workmen and companies to arbitrate. The men had decided to strike in August, but gave up their plan, and on November 30 hearings were begun before the Arbitration Board named under the provisions of the Newlands Act. The arbitrators chosen were: Judge P. C. Pritchard and Charles Nagel, appointed by the Government; F. A. Burgess and Timothy Shea, representing the employees; and W. L. Park, and H. E. Bryan, the railroads. The unions demanded a standard rate of wages, and a standard day with rates for overtime. They asked a five-hour day in passenger service and a ten-hour basis in the freight service. They would also have the "extra men" remunerated on the basis of a through rate pay, and have the "surprise test" eliminated. There are about 64,000 men involved and it is stated that should the workers be successful nearly $33,000,000 annually would be added to the payrolls of the company. It is expected that the awards will be completed early in 1915.

GEORGIA AND FLORIDA RAILWAY CASE. After the employees of the Georgia and Florida Railway had entered into negotiations with the general manager for increased wages and better working conditions, the latter proposed to submit the matter to arbitration. This was done and Mr. L. S. Davis, general chairman of the Brotherhood of Locomotive Engineers, was chosen to represent the employees, Mr. A. W. Anderson, a railroad manager, for the company, and Judge S. J. Peelle, of Washington, D. C., was picked by the United States Board of Mediation and Conciliation as the third arbitrator. The board met in Augusta, and on April 28 hearings were begun. The employees contended that their rates of pay were below those of other roads in the same section of the country. The railway company, on the other hand, maintained that although these wages were lower the physical conditions were better and the responsibilities imposed upon the workers less. The award granted the employees an increase of about 12 per cent in wages, but Mr. Anderson dissented from this on the grounds that the company was unable to meet its operating expenses. A bill of exceptions was filed in the United States District Court but was dismissed and the award confirmed, and in an appeal to the Circuit Court of Appeals this decision was again upheld.

KANAWHA COAL STRIKE. This dispute, which began in April, had been in progress for two months when the Department of Labor stepped in at the request of the employers for an investigation of conditions. It was contended by the operators that organized labor had demanded that $1 or $2 a month should be sent for each employee—the money to be taken from their pay—to the officers of the United Mine Workers at Indianapolis. However, representatives of the United Mine Workers denied this, stating that they merely asked for a voluntary "check-off" of dues, and accepted mediation. Three commissioners of conciliation, made up of one miner, a coal operator, and A. L. Faulkner, immigrant inspector at Cleveland, were appointed. It was agreed by both sides that the men should return to work at the same wages that were paid before the outbreak of the strike; that by the authority of the individual workers given in writing a sum not to exceed $1.10 per month should be paid to the treasurer of the local union of the United Mine Workers of America by the "check-off" system; and that a commission to investigate and determine wages and grievances was to be chosen. These recommendations were adopted by the operators and the union, the action of the latter being ratified by the convention of miners held at Charleston, W. Va.

INDIANAPOLIS STRIKE. In February the award of the Indiana Public Service Commission, which acted as a board of arbitrators in the Indianapolis Street Car Strike, begun on Nov. 1, 1913, was made. The conditions of the employees were ameliorated, although not one of the several grievances submitted by the employees was fully recognized. Minimum and maximum rates of wages such as had existed before, were retained, but these were raised to 21 cents, a 5 per cent increase, and 28 cents respectively. Those employees known as "extra men" are to receive a guaranteed minimum of $45 a month. Benefit is also to accrue to the workers in many other ways. There is to be no discrimination against union men. This is of great significance, for nearly all the employees were reported to be members of the Street Car Men's Union. Definite assurances were given that future grievances will be heard and the hours and conditions of service improved. This award is to hold until Nov. 7, 1916. Provision has been made for the settling of any future dispute or grievances coming as a result of the award, by means of a permanent court of arbitration of three members, to be appointed by the United States District Justice for Indiana, the chief justice of the Appellate Court, and chief justice of the Supreme Court, each to choose one.

The strike from which this award arose, began on Nov. 1, 1913, and tied up the entire street railway system of Indianapolis. Much violence succeeded an attempt to import strikebreakers and during the rioting four persons were killed and several injured. Several of the policemen in the city resigned rather than protect the strike-breakers, while 200 citizens refused to act as deputies when called upon to do so. On the ground that citizens had not done their duty the Governor at first refused assistance but afterwards ordered the National Guard of Indiana to the scene. The strike engendered such bitter feeling that Mayor Shank finally resigned, because of it and of his inability to prevent the teamsters' strike. It is expected that as an outcome of this dispute Indiana will pass a comprehensive arbitration law, which will provide for the compulsory investigation of strike grievances.

TUGBOAT-TOWING INTERESTS ON THE GREAT LAKES. This case was the outcome of a decision of the United States District Court which held that the time spent in awaiting orders or taking on supplies should be counted in with the hours of navigation. Now, the licenses granted by the Steamboat-Inspection Service of the Department of Commerce require double crews for all boats or tugs, with the exception of those navigated only 13 hours out of the 24. Had the loading hours been included in the total time, many of the tugs would have been engaged in actual navigation more than 13 hours, and by the above interpretation would be required to have double crews. An agreement reached in February, 1914, between the owners and the International Longshoremen's Association before this decision was rendered and under conditions existing previous to it, had, therefore, to be modified. The tug men, however, objected strenuously to double crews, maintaining that it involved the probability of one crew being compelled to sleep aboard the tug while the other was operating it, thereby subjecting the men to great peril. They also contended that there would result unsanitary conditions and great inconveniences to the laborers, because bunks would be used continuously by one crew after the other. The owners, on the other hand, were unwilling to consent to the limitation of the use of their boats to 12 hours a day. It was under these conditions that the Board of Conciliation intervened, and an agreement was finally reached on May 15, 1914. Provisions were that the tugs should be made available for the full length of time for service with single crews, and that the tug-men's unions should furnish the laborers necessary to man the boats for the whole 24 hours.

Among the more important minor arbitrations during the year, not mentioned above, were the following: On January 18 a settlement was reached in a very short time between 5000 employees of the Delaware and Hudson Railroad who had gone on strike because of the discharge of two union men, and the owners, through the intervention of the Federal Board of Mediation and Conciliation. Small increases in wages aggregating $100,000 and a minimum wage for passenger trainmen, were granted the workers of the Chicago, Burlington & Quincy Railroad. John A. Moffitt and James A. Smith were detailed to investigate a strike of the machinists of the Universal Bottle-Washing Machine Co. of Detroit, and they succeeded in bringing about a settlement through the recognition of the Machinists' Union, the reduction of the hours of work, and an increase in wages. As a result of the efforts of these same commissioners, strikes were averted in the shops of the Lake Erie and Western Railroad and Michigan Central Railroad; and similar pressure in the machinists' strike in Trenton, N. J. brought about a peaceful settlement of what promised to be a serious situation. Satisfactory adjustments were also reached in the Louisville and Nashville Railroad shops, among the sawmill workers of Washington, and in the longshoremen wage dispute in Texas. Mediation, though, was unsuccessful in the Calumet and the Colorado strikes. See STRIKES AND LOCKOUTS.

GREAT BRITAIN. Great strides have been taken in recent years in the matter of settlement of trade disputes in Great Britain. The Board of Trade was authorized in 1896 to act as an agency of mediation and, in 1908, a permanent court of arbitration was established. As a result of the extensive and stubborn labor contest some three years later, an Industrial Council was created. This now consists of 13 representatives of employers, an equal number for the workmen, and has Sir George Askwith as its chairman. There are several voluntary conciliation boards and standing joint committees in existence throughout the country. In July, 1913, the Industrial Council submitted a report declaring emphatically that the principle of collective bargaining should not be called in question, and suggested that provision be made for the submission of disputes to a third party, where the ordinary machinery of arbitration has failed; but compulsory arbitration was not advised.

BIRMINGHAM STRIKE. The strike of the unskilled union workers in the vicinity of Birmingham involving 36,000 men was settled last spring through the intervention of Sir George Askwith of the British Board of Trade. A minimum wage of $5.60, the principal demand of the strikers, was granted; the loss in wages, though, during the dispute, was approximately $1,330,000. Those on strike were chiefly members of the National Union Gas Workers, the Amalgamated Iron Workers, Brickmakers, General Laborers, and the Workers' Union.

ARCHÆOLOGICAL INSTITUTE OF AMERICA. The work of the Institute was carried on in its various departments during the year. The School at Athens continued its excavations at Corinth, and conducted a minor excavation in the vicinity of the Erectheum on the Acropolis at Athens. The American School of Archæology, continuing the work upon which it has been engaged for seven seasons at Guirigua, Guatemala, excavated the buildings on the north and east sides of the Temple Court. It further conducted explorations in the Peten district of Guatemala and made a survey of the ruins at Guarai in New Mexico. Plans for new excavations under the auspices of the institute on the shores of the eastern Mediterranean were necessarily postponed on account of war conditions now prevailing in the two regions of greatest archæological interest. In the field of publication the most significant event of the year was the final launching of the new nontechnical magazine *Art and Archæology.* David M. Robinson was appointed general editor, W. H. Holmes, art editor, R. V. D. Magoffin, associate editor, and Mitchell Carroll, General Secretary of the Institute, managing editor. The first number appeared on July 1, 1914. The officers of the institute in 1914 were F. W. Shipley, president; Mitchell Carroll, general secretary; Willard V. King, treasurer. The schools maintained by the institute are the American School at Athens, American School of Oriental Research in Jerusalem, and the School of American Archæology in Santa Fé, N. Mex. The membership is about 3500.

ARCHÆOLOGY. MESOPOTAMIA. At Assur, in Babylonia, the German Oriental Society has been engaged for a year. The most important results from the campaign have been the discovery of five well-preserved tombs belonging to Assyrian kings, and the finding of a very old temple of Astarte for which the claim is made that it dates from the fifth millennium B.C. The temple contained, besides a number of pictures, other works which are likely to prove of great use in changing the present knowledge of ancient history in this part of the world. In the temple were found all the usual signs of the oldest Sumerian culture, although evidence is not at hand as yet to guarantee that it was the Sumerian people who worshiped here, in this oldest Assyrian temple yet discovered, in the year 3000 before our era. The five royal sarcophagi were nearly as interesting a discovery as that of the temple just mentioned. They were found in the southern wing of the palace and are the first monuments of this character to come to light. Although in Parthian times these sarcophagi were rifled and injured it has nevertheless been possible to restore them. Three have been identified as having belonged to King Asur-Belkala (who dates about 1100 B.C.), King Samsiadad (about 820 B.C.), and the well-known King Asur-Nazir-pal III (who reigned about 860 B.C.). The tomb of the latter is the finest as well as the largest, measuring 6 feet in breadth by 5½ in depth.

Egypt. Egypt has afforded richer results this year than the other fields of activity. At Abydos the excavators were lucky enough to discover, behind the western wall of the temple built by Seti, what in all probability is the so-called Strabo's well—or the mystic tomb of Osiris. The building is entirely underground, for it was over 30 feet below the level of the temple, and consists in a general way of a rectangular structure which measures on the inside about 100 feet in length and 60 in breadth. The longer axis of the building runs north and south. On the western side is a great doorway 15 feet in width which came to light in 1912. The walls of the tomb are of the impressive thickness of 20 feet, and built of huge blocks of stone which often are 15 feet in length. The general arrangement of the interior is such that there are three aisles running from west to east, the central one being much the widest. These aisles are separated by huge monolithic piers about 8½ feet square and 15 feet high. Of these piers there are five on each side of the central aisle. They support an enormous architrave 6 feet in height which in turn carries the unusually heavy ceiling. The latter is made up of great monoliths of granite over 6 feet in thickness. The two side aisles, which are about 10 feet wide, are connected at each end by cross aisles which form a ring around the central aisle and which, by being of a much lower level than the latter and filled with water, make a sort of island of this main central aisle. Although the present excavations have gone only to the depth of 12 feet it is believed that the enclosing canal went to the depth of about 25 feet. The water which filled it was due to infiltration from the Nile. On to these side aisles open six cells in front of which ran a narrow ledge. At the eastern end of this curious hall, and across the canal, is a long room which is the mystic tomb of Osiris. While this portion of the building is later than the rest, and dates probably from the time of Seti I, the main part is much older, and from its style of construction, which resembles that of the temple of the Sphinx, dates probably in the fourth dynasty. It is therefore one of the oldest monuments in Egypt.

At Antæopolis the Germans carried on a campaign which lasted from the end of September, 1913, until the close of March of this year. The work was confined to the cemeteries of the city and it was found that the oldest burials go back to the first dynasties. Besides the ordinary interments the excavators found rock-cut tombs belonging in time to the old kingdom. In the chief necropolis, which is located in the hill of Gâu, rock-hewn tombs of princes of the middle kingdom were opened. Those of Wahka I, Wahka II and Ibu are much larger and of greater magnificence than any private tombs of this period previously known. Their arrangement is such that a broad approach leads up from the plain to a terrace upon which appears a hypostyle hall. Beyond this lies an upper platform, also carrying hypostyle halls, to which access is given by a rock-cut ramp and bridge. There a gate gives entrance into the rock-cut burial tomb which resembles those at Beni-Hassan.

From Antinoe the English have recovered, in addition to fragments of papyri with lines from the Iliad, the Odyssey and the Phœnissæ of Euripides, about 10 pages from the Idyls of Theocritus. The pages contain about 50 lines, so that about 600 lines in all have been obtained. The work dates from the fifth or the sixth century and therefore antedates the earliest of the mediæval manuscripts now in existence. Except for a small fragment found at Oxyrhyncus, and some fragments of vellum in Berlin, Paris, and Vienna, this is the only Theocritean manuscript which has yet been found in Egypt.

Eleven weeks' work by the Byzantine Research and Publication Fund at Dêr El-Ganadla ended on January 28 with the result that many buildings of Coptic times were cleared. In these the most important discoveries were some frescoes in a villa which included a picture of the Three Holy Children in the fire, Saints Cosmas and Damian, and an exceptionally well painted peacock. At Gizeh the Vienna Imperial Academy of Science had been working for three years on the middle area of the cemetery connected with the pyramids of Cheops and Chephreu. In April of this year work on the eastern portion of the concession had been completed. The results of the excavations are of prime importance in adding to our knowledge of the *mastaba*. Not only was a somewhat more developed type for the archaic period seen in a few instances, but much new evidence has been discovered for the type with corridor and special *serdâb*-building. This is of particular importance since one example has been dated in the time of Dedkers' Asasis (Isesi, Asesa, or Assa). This year, moreover, has resulted in the first discovery, on this site, of mastabas belonging to the time of the sixth dynasty. To be sure the loss of the upper parts of these buildings precludes the restoration of the exterior; but the arrangement of the interior can be made out in its essentials. The most important fact noted is the change of position of the grave shaft. In earlier times the practice had been to have it descend vertically from the mass of the mastaba. At this time it was discovered that a steep corridor, starting outside the building proper, descended to the burial chamber. This passage was closed by stones more or less shaped to fit their location. About this time also it became customary to decorate the chamber of the dead which previously had received no ornament. Two burials presented the peculiarity of having the body encased in a coating of plaster. This was applied over the linen wrappings of the body and modeled to imitate the form.

Near Lahun the British School has been engaged in clearing the whole area surrounding the pyramid of Senusert II. During the course of the work certain new features of construction were observed. Around the pyramid was a large trench with sloping sides which was filled with clean sand covered over with a thick stratum of pebbles. It is supposed that this feature was for the purpose of absorbing whatever moisture might accumulate from the rainfall. This trench was enclosed by a stone wall. Outside this wall were found the tombs of the royal family. The whole group of the royal tombs was enclosed by a brick wall 16 feet in thickness and around this, except on the northern side, a row of trees so arranged that 42 occurred on a side. Under the pyramid sand-bed a child's skeleton was found in a sealed box with offering dishes nearby. This seems to have been the human sacrifice made at the time of building the pyramid. In one of the five tombs located along the southern side of the pyramid it was found that a wide pit descended, by means of rock-hewn steps, to about 28 feet in depth. The tomb, like all the others, had been broken into and rifled, but curiously the robbers had overlooked a recess in which was found a golden crown. This consisted of a broad band of beautifully burnished metal decorated with 15 beautiful, inlaid rosettes and a royal cobra in front, itself inlaid and furnished with eyes of lapis lazuli. At the back of the crown rise two golden plumes, while three double streamers hang from the sides. Besides this crown were found golden collars of cowries and lions' heads, as well as two beautiful pectorals of gold inlaid with small pieces of carnelian, turquoise, and lapis lazuli.

At Meroe this year's work has seen a complete uncovering of the northwestern part of the site, and the connecting of the various sections. As a result the whole northern portion of the site is exposed, leaving only the southern part to be cleared. It has been found that the main entrance to the town was in the northern wall and that it led through an avenue of trees toward the centre of the city. There on the left side appears to have been a public building of some sort. Almost opposite this structure was uncovered what perhaps may have been an observatory, together with the house of an astronomer. The palace was situated to the left of the main gateway. It consisted of a large building containing a central courtyard and veranda. Opposite the palace was discovered a walled enclosure which was used for the cremation of the dead. The chimneys and flues were found in place and the floor was deeply covered with partially burned bones. Dating from the second century B.C. was discovered a place with its equipment used for astronomical purposes. On a wall were found a number of *graffiti* which showed the results of observations. Besides this were found rude sketches of two instruments which seem to resemble a transit and an azinuth instrument. Near the top of a flight of steps which led down to a pool and baths were found two stones used in taking observations. On one of these stones were marks pointing to corresponding symbols on the other.

From near Meroe also Sayce and Garstang have recovered the best, and longest Meroetic inscription yet found. Hopes are entertained that it may afford means for the complete decipherment of Meroetic writing.

From excavations at Kerma in Nubia traces of a garrison of the twelfth dynasty have been found, together with pan-grave burials of the folk who invaded this country in the Hyksos period. From fragments of alabaster which bear the names of Neferkara and Pepi I, it is proved that this site was occupied as early as the time of the sixth dynasty. The evidences for the later intrusions of the Hyksos period are afforded by remains found in some ruined chambers. These were filled with ashes and cinders indicating a fierce fire. In this débris were many seal impressions of the Hyksos period. The graves of the invaders of the Hyksos period gave the best results of the whole excavation. The burials were distinctly barbaric. The chief personage was laid in the centre of a large pit, upon a carved bed, on his right side with his head toward the east and supported by a wooden pillow. Between his knees were placed a sword and dagger, while an ostrich-feather fan and sandals were located at his feet. At his feet also was buried a ram, often with the tips of the horns protected by ivory knobs. Around the bed lay the bodies of men and women in contracted positions with their heads to the east. Among them were placed pots, pans, jars, stools, etc. Over the whole burial was placed a great oxhide. Since all the bodies were interred at the same time we have proof here of human sacrifice on the occasion of the death of notable persons.

One of the most interesting discoveries made at Oxyrhyncus was that of a hitherto unknown work by the Poetess Sappho. It consists of two rolls of papyrus and it was found together with two rolls of her compatriot and contemporary Alcæus. One fragment gives the title of one of Sappho's manuscripts as "Book I, of the odes; 1320 lines." But unfortunately only 40 lines are complete. Excavations by Messrs. Whittemore and Wainwright at Sawâna have resulted in the discovery of burials belonging to the eighteenth dynasty. Many contemporary objects, including many scarabs, were found.

At Tarkhan, about two hours by rail from Cairo, a pre-dynastic burial ground has been discovered. Some 1500 graves have been opened which date just before or after the beginning of the first dynasty. Fortunately in some instances the upper part of the grave was completely preserved. Over the common burials was a mound plastered with a mixture of gypsum and sand to form a low dome. The larger graves were covered by mastabas. In these latter burials a flat pile of sand supported by a retaining wall 18 inches high covered the grave. The skeleton was usually found to be in a contracted position, with an alabaster bowl, which was covered with a stone palette, and a knife between the knees and the face. The tombs of the nobles were over 100 feet in length and surrounded by a thick wall of brick. These tombs originally date from the middle of the first dynasty, but were opened and re-used in the time of the twelfth dynasty. Around these same tombs were found some burials of the household still in a perfect state of preservation. One tomb, curiously enough, contained the skeletons of three beheaded donkeys. It was found that during the first dynasty green-glazed vases were in common use; that women usually and men occasionally wore necklaces. Indications were plentiful that these people were far from being barbarians. Their houses were of the same type, though in wood, as those already known and built of stone or brick. About the beginning of the dynastic period, to judge by the skeletons discovered, a race of smaller stature invaded this region after having dribbled in for many years before this time. So far as can be made out Tarkhan was a temporary capital, which was abandoned gradually after the foundation of the city of Memphis by Mena, a couple of generations later.

From a cemetery dating from the twelfth and the eighteenth dynasties, and lying somewhat to the south of Tarkhan, Flinders-Petrie has recovered some fine jewelry and canopic jars.

SYRIA AND PALESTINE. The work which has been done at the site of Hittite Carchemish, on the Euphrates, shows that it was a fortified city of great importance. It consists of a strong enclosure which surrounds the palaces and related buildings together with a citadel. Besides this there is an area, which was unfortified, and was occupied by the common people. Attention is being paid now to the enclosed area, with the result that it has been found that the encircling wall, which embraced about one-half a square mile on the bank of the river, has been swept away to make space for the construction of a later town. The great mound, however, upon which the wall rested, still stands, rising to a height of 50 feet from the moat. Three gates here remain. At this point Hittite buildings which consist of flanking towers and lion-guarded gates, one within the other, have been found. These gates are separated by open courts so that the enemy after breaking through each gate would find itself exposed to attack on all sides. From the excavations at one of these gates was recovered an excellent head of either a god or a king of the latest Hittite times—the seventh century. Inside the walls were found a large area covered with the foundations of palaces. These together with a water-gate on the river bank have been partially cleared. The gate was flanked by great lions cut from dolerite and decorated with hieroglyphs in the Hittite tongue. One relief has been recovered showing children playing with knuckle-bones and whip-tops. The sculptures here betray much more grace than one usually expects to find in Hittite work. Besides this find a fragmentary figure of a huge Moloch was recovered. The god is represented as seated on a throne supported by lions and an eagle-headed figure.

The acropolis unfortunately is less well preserved, owing to the fact that in Roman times a great temple was erected on the site, and because at the northern end King Sargon, who captured Carchemish in 717 B.C., had built there a residence for his officers.

In the neighborhood of Jerablus have been discovered a large number of graves containing pottery, tools, and seals of Hittite style which date from about 2000 to 400 B.C. Because of the preservation of the strata on the site of the town itself it has been possible to follow fairly closely the development of culture in this place from Neolithic times to the close of the Bronze Age. Thus Hittite sculpture can be studied from its rise to its disappearance. About 100 new texts have also been found.

At Jerusalem excavations have disclosed the foundations of the circular Tower of Siloam. The same site has afforded a long inscription done in well-cut Greek letters which mentions the presbyters and fathers who with Simonides laid the foundations of the synagogue, the baths, and the inn. The foundations of the first two buildings have been laid bare. In connection with these a conduit was found which led from the spring.

ASIA MINOR. During his work at Antioch Ramsey has discovered the location of the forum. Although but little excavation has yet been done on the site enough has been completed to show that it remains very much in the condition in which it was when St. Paul walked through the place. Evidence exists to show that it was put into its final and complete form about 14–18 A.D. A very long inscription, which is in fact a kind of review of the chief events in the life of the Emperor Augustus, was found to be cut on the balustrade of the monumental staircase, which ascends from the lower town to the forum above. A large church, in all probability that of St. Paul, was located at lower end of the street which affords approach to this staircase just mentioned.

Excavations carried on this year on the site of Aphrodisias have brought to light the ruins of a splendid bath. The building dates from the time of the Emperor Hadrian and is in such an excellent state of preservation that it is possible to identify its various parts. The part known as the *Calidorium* is remarkably well preserved. Particularly interesting are the inscriptions which have been found on the walls. One of them is distinctly modern in its tone. It runs, "The establishment will not be responsible for the loss of money or jewels unless they are left in charge of the porter."

The work of the Americans at Sardis has continued with profit. This year the sacred precinct around the Temple of Artemis has been extensively examined. On the south of this area, important discoveries were those of an early terrace wall of unhewn rocks and a layer of pottery, which assisted in the determination of the original slope of the ancient levels on that quarter. A long Lydian inscription was found during this work. Examinations carried on within the Temple of Artemis revealed the foundations of an earlier temple built of sandstone. As a result of sinking a trench in the bed of the ravine above the temple the excavators were able to make out even and well-defined stratification which allowed them to get their first sure chronological sequence for previously discovered objects. In the same neighborhood not over 20 feet from the surface of the ground were found Lydian remains of the sixth and seventh centuries, and below these a well-defined stratum of pottery bearing a likeness to the early Ionic fabrics. Below these again occurred fragments of geometric wares of black and gray clays. One of the most interesting finds in connection with the trench mentioned already was that of a very beautifully executed horse's head, and a foot with a gilded sandal. From the tombs many objects were recovered. Especially notable were a gold necklace of the modern "dog-collar" type, and three small lions which seem to have been carved from gold nuggets.

GREECE. From early April to late June the German Archæological Institute has been at work excavating in the neighborhood of the Dipylon Gate at Athens. The digging was carried on over a territory which extends between the wall of the city and the modern Piræus Street, along the right bank of the river Eredanos. One hundred and twenty meters from the city wall was found a boundary stone inscribed on front and back ΟΡΟΣ ΚΕΡΑΜΕΙΚΟΥ. This stone, which had nothing to do with the Inner or Outer Ceramicus, marked the edge of the street leading from the gate, and determined the direction of the famous burial street which, after six *stades*, ended at the Academy. One of the results of the excavations was to show that this street had the imposing breadth of 38 meters. Digging near the city wall, which brought to light a private burial place, disclosed also evidences of Sulla's siege of Athens in the form of burned tiles, and fragments of wall paintings. The floors here found were executed in *terrazzo* and all the details pointed to a house belonging to the Hellenistic Age. The excavators found as well traces of an imposing burial place which was about 15 meters broad and about 8 meters deep. The front half was given up to a richly developed façade with wings and a circular structure, about seven meters in diameter, in between.

ITALY. Various places in this country have come in for attention on the part of the archæologist. At Corropoli a neolithic cemetery has been examined and some 40 tombs have been opened. The practice of entombment was not burial but that of laying out the dead in circular or elliptical huts. On the island of Gozzo government employees, while digging at Pergla, came across an interesting tomb of the Neolithic period. It was contemporary with the *hypogeum* of Hal Saflieni discovered at Voletta a few years ago.

More extensive is the work which has been done on the site of Ostia, where excavations have been carried on for several years. This year's campaign has been occupied with the area lying between the theatre and the temple of Vulcan. Work here disclosed the fact that the *Decumano Republicano*, one of the main streets of the town, lay exactly two feet below the level of street of Imperial Rome, which was uncovered two years ago. It probably dates from the second century before our era. This street was paved with blocks of tufa cut with deep furrows on either side for the reception of the wheels of vehicles. The shops which opened on to the street consist of four rooms about 13 feet square. Rude mural drawings found in them date them from the time of the Gracchi. Possibly the most interesting discovery made at Ostia this year was in the street which led up to the temple of Vulcan—running parallel to the *Decumano*. This street is nearly 16½ feet in width. Located on it are several houses so preserved that the second storeys are standing. From these it becomes clear that the Romans of Republican times at Ostia had developed the plan of dwelling in flats. From Martial of course we know that this mode of life was common enough in Rome in his days. Here at Ostia the entrances to these houses are three feet above the level of the street, so that access to them had to be afforded by flights of steps. Five similar entrances have been found in one house or block. On each story there were three apartments, with a balcony built out over the street and constructed as to join with the others to form a continuous outdoor corridor.

As a result of sinking a shaft on the highest point of the Palatine Hill in Rome, Boni believes that he has located the *Mundus*, that is, the seat of Dis and Proserpine. This monument, which was lost even to the Romans themselves in the time of the early empire, consists of a domed building constructed of blocks of tufa. Boni's belief rests upon discovery of a stone cover resting upon the chamber, which he believes to be the *lapis manalis*, which was supposed to close the entrance to the infernal regions, through which the souls of the dead might rise. This lid was removed three times each year. In addition to this discovery, the location of a shaft which descends from the Chamber to passages lined with cement to render them suitable for the storage of grain (?) seems to confirm the identification of the site. It will be remembered that the *Mundus* was a storehouse for the sacred grain.

Further excavations on the Janiculum, instituted with the intention of ascertaining the exact location of the Sacred Grove and Spring of the Nymph Furrina, disclosed traces of the walls and pavement of a temple which was dedicated to the Syriac gods. Inscriptions recovered from the site show that the temple was built or redecorated by a police official, named Gaionas, during the time of Nero. In or near what apparently was the sanctuary of the temple were found a fragment of a fine candelabrum, which was decorated with figures of nymphs and dancing Hours, and a complete statue of Dionysus executed in Parian marble. A more interesting find was that of a bronze figure about three feet tall clothed in a kind of mantle which, permitting the form to be visible, ended in two points at the level of the ears. This was found in the centre of the seven-sided cell and is thought to represent Hadad or some divinity akin to the Mithraic Kronos. The idol, like many another Syriac deity, was wrapped about by the folds of a serpent, and between each coil were found remains of an eggshell, which seems to show that some rite of consecration had been performed here. Also on the Janiculum was discovered some fragments from a figure of Zeus.

In Rome has been found the house of Pollio, the friend of the poet Virgil. The ruins, which contained many works of art, give plenty of indications that the building was magnificent. In the atrium was discovered a pavement executed in black and white marble, showing a nymph riding upon a Triton. Traces of a fountain were found on one of the walls.

In Tarentum has been found a large Greek tomb built in the form of a house of the sixth century B.C. In it was a carefully paved floor and four Doric columns which supported the roof. In the tomb were three sarcophagi. At Val Vibrata a burial ground of the Stone Age has been located. It consists of small huts of such size as to contain anywhere from two to eight bodies. On either side were low platforms, which sloped toward the centre of the building, upon which were placed the dead, so arranged that they lay on one side with the knees drawn up in a cramped position. One of the huts contained no bodies; instead within it was found a large circular hearth together with pieces of broken vessels, and the bones of animals. Here are believed to have been held the funeral banquets in connection with the burial of the dead. The various objects found here in these huts increase one's respect for the degree of civilization attained by the Neolithic Age.

NORTHERN EUROPE. Near Lyons in France, the ruins of a large house of the Roman period was found and uncovered. Its mosaic floors were uncovered and coins of the age reaching from Augustus to Gratian were recovered. Many potsherds of Gallo-Roman style came to light. At Sogny, also in France, a large Gallic cemetery was examined and 270 tombs, of which 38 were intact, were opened. In 14 of these was found a warrior's chariot. Besides these the burials contained a number of spears, swords, javelins, daggers, knives, pottery, and some jewelry mounted on iron and bronze.

At Caversham in England a pit dwelling was discovered in a quarry. It was furnished with a perpendicular passage which led to a large circular room several feet in diameter. The whole structure was found to be full of black earth and charcoal in which were remains of the Bronze Age. See PEABODY MUSEUM.

ARCHITECTURE. The world's work in architecture for the year 1914 was overshadowed by the gigantic cloud of international enmity, which resulted in a number of conditions inimical to building progress. Available funds in public treasuries were diverted toward national defense, while the purse strings of private pocketbooks were pulled tight. In Europe there occurred also the concomitant deficiency of labor and materials. In general the annual output, though smaller by scores of buildings in the countries at war, was but slightly reduced in America. It is not possible in the succeeding paragraphs to make an accurate compilation or record of new structures, but a general survey is presented affording a basis for a fair estimate of the architectural production of 1914.

UNITED STATES

In the United States the year 1914 was one of contrasts. There were more unemployed draftsmen than ever before; office staffs of architects were reduced to the minimum of necessity. On the other hand, there were under contract at one time during the year churches alone to the value of $42,000,000 and one-seventh of this amount was represented by ecclesiastical structures in process of erection in New York City. Again, although there had been a decided decrease in the number of theatres, public monuments and the smaller private residences, due to money stringency, this was well balanced by the wholesome increase in the number of hotels, schools, and especially of churches and hospitals. Other types of buildings apparently followed their normal factor of increase, showing a regular quantitative result and an encouraging qualitative improvement. Stylistically the much praised and equally decried eclecticism, so characteristic of the United States, was almost imperceptibly crystallizing, developing modes of expression less and less alien to the soil, more and more American. The process was manifested by the usual stages, for instance, the slow modification of practically set local types in New England; the free and breezy interpretation of the Pacific Coast; the sturdy, often experimental, sallies of the Middle West; the pronounced cosmopolitan quality of each great metropolis. The whole gamut of the historical styles was repeatedly struck, often advantageously adapted, and all too often maltreated in the "Americanization"; but the whole effect was salutary, it makes for an ultimate unity in the establishment of which—under the existing conditions—a single twelvemonth can play but a small and humble part.

New York, Chicago, Minneapolis, and San Francisco contributed the largest number of buildings. Cleveland and Los Angeles were well represented, while Boston and Philadelphia and the large cities of the South produced no important work. No great structure that dominated the whole field could be pointed out as did the New York Courthouse design in 1913, but this deficiency was redeemed by the splendid groups under way at the Panama-Pacific International Exposition grounds, and, furthermore, by the greater number of smaller buildings of good design which were erected at many points throughout the country.

Concrete continued in favor as a building material, and found many applications in farm buildings. Terra cotta was more and more generally used, and the weight and height of new buildings, especially in New York, led to further experiments in fireproofing, windbracing, and foundations.

CHURCHES. The ecclesiastic work of the year was dominated by the splendid mediævalism of the firm of Cram, Goodhue & Ferguson; this served as an enlivening virus for the degraded Gothic of the end of the last century and infused an invigorating force into a set of dry forms. St. Thomas's, in New York, was the best of the recent churches. Since its erection, Mr. Goodhue began practice independently and produced a fine Gothic structure, the Chapel of the Intercession for Trinity Parish, New York. St. Thomas's stands on the site of the old building by Upjohn which was burned in 1905. It has Guastavino tile vaults which are acoustically a thorough success. Experiments to this end were conducted under the direction of Professor Sabine of Harvard, who devoted much attention to the material composition of the tiles used, the degree of heat to which they were subjected in baking, and the direction of the joints between them. Another interesting Gothic structure is the Chapel of the Queen of All Saints, Brooklyn, by Riley & Steinback, the much reduced realization of an abandoned cathedral project. Other Gothic examples are the Church of the Holy Family at Latrobe, Pa., by John T. Comes, Emmanuel Presbyterian Church at Philadelphia, by C. W. Bolton & Son, Christ Church at Norfolk, Va., by Watson & Huckel, and the Broadway Presbyterian Church, New York, by L. E. Jallade. Several noteworthy examples in the Italian Romanesque or Lombard style, chiefly of brick, are the Webb Horton Memorial Church at Middletown, N. Y., by Carrère & Hastings, St. Mary's at McKeesport, Pa., by J. T. Comes, SS. Peter and Paul's at Rochester, N. Y., by Gordon & Madden, and St. Patrick's at Philadelphia, by LaFarge & Morris.

The Colonial and its parent, the English Renaissance, with its derivative Adam and Gibbs varieties, continued in favor in New England and the Middle States, witness the Fort Washington Presbyterian Church in New York, by Thomas Hastings, the Second Presbyterian Church at Boston, by Cram & Ferguson, the First Presbyterian Church at Lewiston, Pa., by C. W. Bolton & Sons, the Second Unitarian Church at Boston, by Cram, Goodhue & Ferguson, and All Soul's-in-the-East at Summit, N. J., by Joy Wheeler Dow. Other indications of the versatility of the American designer were to be seen at St. James's at St. Joseph, Mo., by Eckel & Aldrich, the First Presbyterian Church, by Wm. C. Hays, and St. Ignatius', by C. J. I. Devlin at San Francisco, the First Church of Christ Scientist at New Orleans, by Sam Stone, Jr., All Saints' at Masontown, Pa., by John T. Comes, in the Italian and other forms of the Renaissance, using terra cotta extensively; while in the Baptist Church at Churchland, Va., by Neff & Thompson, and in St. Paul's at Cedar Rapids, Iowa, by Louis H. Sullivan (later modified by Wm. C. Jones) it was interesting to note a new independent and nontraditional feeling, which was sponsored by these particular architects in a number of other enterprises.

SCHOOLS. The West, notably the Coast States, maintained its high rate of increase in school buildings. These were chiefly of brick and stucco, and the suggestion of the "Mission" parentage controls many of their designs. Classic forms in stucco and terra cotta likewise were found and the influence of the eastern Collegiate Gothic appears in three or four examples. It was also interesting to follow in the far western high and technical schools the growth of group planning. This was well illustrated in the work of Allison & Allison in their State Normal School and the Wilmington High School at Los Angeles, as well as in the High School group at Santa Monica, and in the work of Whitey & Davis in the Polytechnic High School at Santa Ana. The last was a group of four buildings, entirely of brick with plaster covered frame interior, the total cost not exceeding $176,000. Good single structures were the High School at Santa Paula, by Allison & Allison, the Polytechnic High School of San Francisco, by that city's Board of Public Works, and the High School at Woodland, by W. H. Weeks. All of these were in California. To them should be added the High School at Newburg, Ore., by E. E. McClaran. The smaller common or primary school buildings were of varied type, though brick predominated as the general building material; e.g., the McKinley School at San Francisco, by Newton Thorpe; the Malabar School at Los Angeles, by Whitey & Davis; the Ainsworth School at Portland, Ore., by F. A. Naramore; the Central School at Tacoma, Wash., by Heath & Gove. In the Middle West, Garber & Woodward were the architects of the Guilford School and the Frederick Douglass School at Cincinnati, and Wm. B. Ittner of the Central High School at Minneapolis. Notable eastern examples are the pseudo-classic High School at Albany, N. Y., by Starrett & VanVleck, the Colonial brick Widener Memorial School at Longport, N. J., by Horace Trumbauer, the High School of like style at Southampton, N. Y., by Hewitt & Bottomley. The last named was a carefully studied structure, the winning design of 23 submitted. The Colonial style was prescribed because of the fine old town houses still standing at Southampton. The architects allotted 67 per cent of the available wall space to windows, this being 30 per cent more than the New York State Education Department requires. The Flemish Renaissance manner appeared in the Ridge School and the Jacobean in the Normal School, both at Newark and both by E. F. Guilbert.

UNIVERSITIES. The universities have come fully to appreciate the advisability of the prearranged plan for campus growth. Northwestern University at Evanston, Ill., joined the ranks of the larger institutions with such a general plan of development, the design of Palmer, Hornbostel & Jones, and in 1914 erected new dormitories as part of this scheme. Plans likewise were adopted for a large group at Portland, Ore., for Reed College; the designs were by Doyle & Patterson. Ohio State University built a library, by Allen & Collins, of English Renaissance design; the University of Utah added a $300,000 administration building by Cannon & Fetzer and Ramm Hansen. The most important work of the year in this field, however, was in the Americanized Collegiate Gothic manner, which had established itself at at least a dozen large institutions. Inspired by the example of West Point, the Virginia Military Institute adopted a large general plan by Bertram G. Goodhue. Other Gothic university buildings were the Macky Auditorium at Colorado State University, by Gove & Walsh, the new building for Notre Dame Academy at Cleveland, by Wm. C. Jansen, and the Veterinary College for the University of Pennsylvania, by Cope & Stewardson.

HOSPITALS AND HOMES. The year witnessed a remarkable activity in hospital construction, especially in and near New York City. The general development of hospital planning followed faithfully the English policy of decentralization. This led to multiplication of units, long narrow wings and pavilions, and interminable connecting corridors. Many new hospitals were erected, a few for specific diseases, and several old foundations made noteworthy extensions. In New York State were completed the Colonial Samaritan Hospital, by G. B. Post & Sons at Troy, St. Anthony's, by I. E. Ditmars at Woodhaven, L. I., the Metropolitan Life Insurance Company's Sanatorium at Mt. McGregor, by D. E. Waid, and the following in Greater New York: Sea View Hospital, Staten Island, by R. F. Almiral; Greenpoint Hospital, by F. J. Helmle, and new buildings and extensions for the German Hospital, by I. E. Ditmars, for the French Hospital, by Heidelberg & Levi; for the Hospital for Deformities and Joint Diseases, by G. Provot, for Bellevue Hospital, by McKim, Mead & White. In Pennsylvania were built two brick Colonial hospitals: the thoroughly decentralized Schuylkill County Hospital, by L. L. Stockton and H. C. Pelton at Schuylkill Haven and the Henry Phipps Institute for the Treatment of Tuberculosis by Grosvenor Atterbury at Philadelphia. Massachusetts' only contribution was the Children's Hospital at Boston, by Shepley, Rutan & Coolidge. At Baltimore was completed the Phipps Psychiatric Clinic for Johns Hopkins Hospital, by Atterbury, and at Waterloo, Iowa, St. Francis's Hospital, by V. J. Klutho.

With hospitals Homes readily may be classed, for they are often subject to similar demands in planning and purpose. The excellent conception of A. W. Brunner found form in the Montefiore Home in New York City. This had adequate provision for 500 patients suffering from chronic diseases. It consisted of nine buildings, all of brick, limestone, and terra cotta, and each a segregated unit connecting with a general corridor. The buildings and site are valued at $2,000,000, and the annual operating cost is $300,000. To provide for future comfort, the city fathers were prevailed upon to close a public street that disturbed the plan, and a restriction was formulated to prevent building within

60 feet on the four limiting streets. The John Dickson Home for Aged Men, by Arthur B. Heaton at Washington, D. C., is a good Colonial example and, in New York again, the Anthony Home (for working women) in the Georgian style, by Valentine & Kissam, should also be noted.

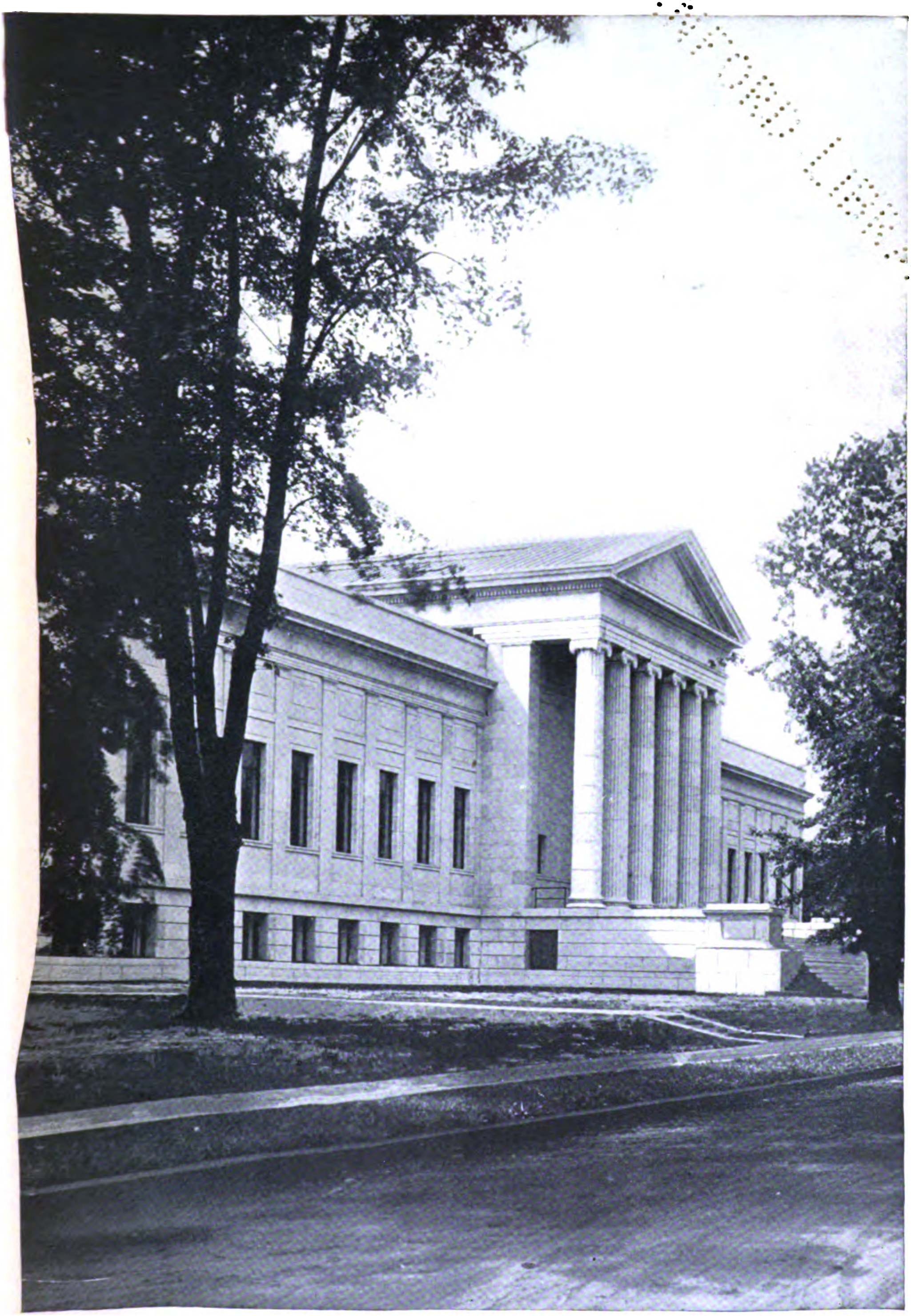
PUBLIC BUILDINGS. The quota of public edifices completed in 1914 was not large, and the usual preponderance of municipal architecture was noticeable. In the national capital a new post office was built, by Graham, Burnham & Co. and Oscar Wenderoth, while Tracy & Swartwout furnished the accepted design for the new Washington Memorial Hall, which was probably to be one of the structures of leading importance in 1915. Both Utah and Idaho completed State capitol buildings, the former by Richard K. Kletting, the latter a $2,000,000 structure begun eight years earlier, by Tourtellotte & Hummel. At Hackensack, N. Y., and in the Bronx, N. Y., County Courthouses were erected, by J. R. Gordon and M. J. Gavin, the first being a miniature imitation of the stereotyped form of State capitol building, with pronounced wings and high dome. A new Courthouse by Wyatt & Nolting was built at Baltimore, and in New York the design of Alfred Hopkins was accepted for a tall building for the Courts of Inferior Jurisdiction. Of municipal buildings the finest of the year were those composing the $1,000,000 group at Springfield, Mass., by H. W. Corbett and F. L. Pell. A large city hall of striking design and of thoroughly efficient plan was erected for Oakland, Cal., by Palmer, Hornbostel and Jones, while the same firm furnished, in conjunction with E. B. Lee, the accepted design for a municipal building in Pittsburgh, and with John D. Thompson, Jr., the accepted design for the extensive New Castle Co.-Wilmington Public Buildings at Wilmington, Del. Interesting small Colonial and Georgian town halls were built at Huntington, L. I., by Peabody, Wilson & Brown, and at Arlington, Mass., by R. Clipston Sturgis.

LIBRARIES AND MUSEUMS. But one museum was completed in 1914, the Minneapolis Institute of Arts, a stately classic structure by McKim, Mead & White, costing $3,000,000. But few libraries were built, and of these only one of fair size, that at St. Paul, Minn., by Electus Litchfield. Other new structures were at Somerville, Mass., by Edward L. Tilton; at Cold Spring Harbor, L. I., by Peabody, Wilson & Brown; at Carmel, N. Y., the Reed Memorial Library, by Gayler & Pryor; at Exeter, N. H., the Davis Library for Phillips-Exeter Academy, by Cram, Goodhue & Ferguson. At Snohomish, Wash., a library by Bigger & Warner was an echo of the work of A. A. Cantin, a rebel in the architects' camp, who had promised the world a new style made out of whole cloth.

BANKS. The earning capacity of the office building as an asset in the banking business comes more and more to be relied upon by the builders of new structures in this field. At Los Angeles, the building of the First National Bank, by Morgan, Wells & Morgan, and in Chicago, the immense Continental and Commercial National Bank are cases in point. The most important special structure for banking purposes was the severe Morgan Banking House in New York, by Trowbridge & Livingston; while smaller structures in the classic manner were the Citizens' Savings Bank at Stamford, Conn., by L. E. Jallade; the Jefferson Co. Savings Bank at Birmingham, Ala., by Wm. C. Weston; and the small Savings Bank at Taunton, Mass., by Marcus T. Reynolds.

HOTELS. There is no better index of the unity of the United States than the steady increase of the number of hotels, especially of those of medium size. The year was inaugurated by the opening of the excellent Biltmore, the fourth great hotel in New York City, by Warren & Wetmore. This forms part of the large plan of the terminal accommodations of the New York Central Railroad. It is 26 stories high and contains 1000 rooms with 950 baths, not to mention the usual dining, banquet, and ballroom provisions. The building stands above the level of the incoming trains platform of the terminal station, and therefore the kitchens and various mechanical devices are provided for in stories above the street, with consequently greater sanitation and convenience; while for the same reason the ventilation plant is placed on the fifth floor. Both power and heat are derived from the central power plant of the whole group several city blocks distant. Likewise of considerable size were the Hotel Statler in Cleveland, by Geo. B. Post & Sons; the Hotel Oakland, at Oakland, Cal., by Bliss & Faville; and the Tutwiler Hotel at Birmingham, Ala., by W. L. Stoddard & W. L. Walton, while the following with less than 500 rooms also deserve mention: at Omaha, Neb., the Gothic Hotel Fontenelle, by T. R. Kimball; at Cooperstown, N. Y., the Hotel O-Te-Sa-Ga, by Percy Griffin; at Chicago the brick and timber Stockyards Inn, by R. S. Lindstrom; at Worcester, Mass., the Bancroft, costing $900,000, and at Philadelphia the Vendig, costing $600,000, both by Esenwein & Johnson; and at San Francisco the Clift Hotel, by G. A. Applegarth.

STORES. In general the large hotel and the monster department store become amenable to many of the conditions and restrictions that characterize the skyscraper. This was seen to advantage in the Lord & Taylor Store, New York, a 10-story building in the Italian Renaissance style, by Starrett & VanVleck, equipped with a number of novel devices for facilitating purchases and expediting deliveries. Notable features of this building are the arrangements for the comfort of the employees, the display windows, which may be lowered to the basement and replaced by others already dressed, and the consistent use of Italian travertine stone for the floors, ceiling, and piers of the whole of the main floor. The imposing Altman Store was extended to more than double its size by Trowbridge & Livingston, the architects of the original building, and a small new building was completed by H. O. Chapman for the A. A. Vantine Company. At Pittsburgh, the 13-story Kaufmann & Baer Store, by Starrett & Van Vleck, strongly resembles the Lord & Taylor building in New York by the same firm. Mention should also be made of the small Edison Shop on Fifth Av., New York, by Shape & Bready, entirely of terra cotta and colored tile. This was a radical attempt to devise a solution for the troublesome problem of the smaller store front. The garish scheme was carried through the whole of a four-story façade; it relies chiefly upon motives of Byzantine origin in its decoration, and presents a number of frankly anachronistic panels, as of



MINNEAPOLIS MUSEUM OF FINE ARTS
McKIM, MEAD, AND WHITE, ARCHITECTS

Greeks enjoying the phonograph, likely soon to lose their novelty.

Office Buildings. In the office building is found the true American skyscraper, with its thousand and one advantages and its problem of design which is the architect's hope and despair. The height of these buildings has often and to little purpose engaged the attention of New York's Board of Aldermen, and a Heights of Buildings Commission at last reported certain suggested limitations and improvements that would, if adopted, ultimately reduce the sunless canyons of the lower city. Other cities, profiting by New York's quandary, inaugurated a more thorough control of these business leviathans, before they attain to such overweening importance in municipal life. By far the largest office building of the year was the Equitable Building, New York, a 40-story Renaissance structure by E. R. Graham. This was ably seconded by the slightly smaller Adams Building, by F. H. Kimball; the Consolidated Gas Building, by H. J. Hardenbergh; and the Walker-Lispenard Building, by Eidlitz & McKenzie and Voorhees & Gmelin, all three in New York. The last named is the heart of the country's telephone system: it is the headquarters of the New York Telephone and Telegraph Company and the Western Union Telegraph Company. Smaller buildings in New York were: the Hill Building, by Goldwin, Starrett & VanVleck; the Educational Building, by C. A. Rich, devoted entirely to schoolhouse needs, from books to sash-windows; the Russell Sage Foundation Building, by Grosvenor Atterbury. The Franklin Building in Chicago, by G. C. Simmons; the Northwestern Mutual Life Insurance Company's building in Milwaukee, Wis., by Marshall & Fox; and the Railway Exchange Building at St. Louis, Mo., by Mauran, Russell & Crowell also deserve notice. San Francisco produced three large office buildings in the Standard Oil Building, by B. G. McDougall; the $500,000 Call-Post Building, by Reid Bros.; and the Hobart Building, by Willis, Polk & Co., which was a giant structure, faced throughout with terra cotta and completed in every detail within a period of 11 months.

Factories, Warehouses, Etc. In connection with office structures should be considered loft and other buildings used in the lighter manufacturing industries, as distinguished from the factory itself. To this class belongs the National Cloak & Suit Company's building, by I. E. Ditmars, the only large loft building erected in New York, the decrease in the number of new structures of this type being due to a redisposition of the tenants in lower Fifth Av., which left vacant a number of large buildings formerly used by stores, publishers, etc., and then occupied chiefly by the cloak and suit trades. Three large bread and biscuit factories were built in 1914: at New York, the National Biscuit Company's building, by A. G. Zimmerman and the Loose-Wiles Building, by Wm. Higginson; in Chicago, the Schulze Baking Company's building, by John Ahlschlager. Other buildings of the factory type are the Paine Furniture Company's structure in Boston, by Densmore & LeClear; the Parlin & Orendorff Plow Company's warehouse, by Bertrand & Chamberlain, and the Ford Auto Company's building, by Kees & Colburn, both in Minneapolis.

Clubs, Etc. The year's list of new clubs and association houses is unusually large; it includes no less than six new buildings for Christian Associations and similar organizations and an equal number for Masonic brotherhoods. The former are the Harriet Judson Y. W. C. A. in Brooklyn in the Colonial style, by Frank Freeman; the Yonkers Y. W. C. A. in the English Renaissance style, by Franklin B. & Arthur Ware; the Watertown, N. Y., Y. M. C. A., by Jackson & Rosencrans; the fine brick building of the Railroad Branch of the Y. M. C. A. at New York, by Warren & Wetmore, and other Y. M. C. A. houses at Louisville, Ky., by McDonald & Dodd, and at Denver, Colo., by Marean & Norton. To this number should be added the large brick building completed in New York for the Y. W. H. A. Masonic temples were erected at Memphis, Tenn., by Jones & Furbringer and at El Paso, Texas, by Trost & Trost; the Roseville Masonic Temple, a queer complex of Greek and Egyptian motives in a modern street façade of brick and terra cotta, was built at Newark, N. J., by Jordan Green. Northampton, Mass., built an Oddfellows Building, by K. S. Putnam. By far the best of the edifices of this type was the well-studied Masonic Temple at San Francisco, by Bliss & Faville. At Boston the Harvard Club was designed by Parker, Thomas & Rice; at New York the Women's University Club built a new home from designs by Nelson & VanWagenen. Other clubs of miscellaneous purpose were the following: the Collegiate St. Elmo Club at New Haven, Conn., by K. M. Murchison; the Manufacturers' Club at Philadelphia, by Simon & Bassett; the Capital City Club at Atlanta, Ga., by Donn Barber; the half-timber Country Club at St. Joseph, Mo., by W. Boschen; and the stucco Point Loma Golf Club at San Diego, Cal., by Walter S. Keller. The Germania Club and the Shriners' Temple, both at Jacksonville, Fla., and both by V. J. Klutho, are unfortunate transatlantic reflections of the prevailing German manner, in these cases misunderstood and warped to an alien purpose.

Apartments. Large city centres produce apartment houses with an astounding regularity, and with a consequent vulgarity of design and inconvenience of appointments. Of these only a few in the crop of 1914 need be recorded, the best being in Chicago: Lochby Court, by Richard E. Schmidt and Garden & Martin; Lake Shore Apartments, by Marshall & Fox; and at Bronxville, N. Y., Gramatan Court, by Bates & How. Several good examples were erected in San Francisco by Sylvain Schnaittacher.

Residences. Domestic architecture is always an intimate product of the soil; the current work in this field in the United States amply illustrated the adherence to tradition in the Eastern States and showed an unbounded versatility in the Middle West. The largest and most sumptuous private residence in New York was undoubtedly the Frick house on the site of the old Lenox Library, by Thomas Hastings. Of interest in New York State were: the Kernochan residence, by Cross & Cross in New York City; the Mallory residence, by Upjohn & Conable at Rye; "Haymount," by Arthur T. Renwick in Westchester Co.; the Hayward residence, by Bates & How at Lawrence Park West; the Lewisohn residence, by Coulter & Westhoff at Ardsley; the Betts residence, by John P. Benson at Troy; "Killenworth," by Trowbridge & Ackerman at Glen Cove; the Hastings residence, by Carrère & Hastings; "Pond Hollow Farm," by Peabody, Wilson & Brown at Westbury; and the Garver residence, by Stephenson & Wheeler at Oyster Bay. In other eastern States the following are noteworthy: at Philadelphia, the mediæval Italian Willet residence and studio, by Duhring, Okie & Ziegler; at Plainfield, N. J., the Hyde residence, by Arthur Ware; at South Orange, N. J., the L'Hommedieu residence, by Dillon, McLellan & Beadel; at Summit, N. J., the Nicol residence, by W. A. Balch & L. S. Beardsley; at Nutley, N. J., the Norton residence of Colonial clapboards, by Armstrong & DeGeleke; at Manchester, Conn., the Cheney residence, by A. R. Ellis; at Greenwich, Conn., the Sargent residence, by T. E. Blake; at Dalton, Mass., the Crane residence, by Harding & Sever; at Phipps Beach, Mass., the Aborn residence, by Edward B. Stratton; at Auburndale, Mass., the brick and timber Fiske residence, by H. J. F. Ludeman & C. V. Snedeker, Jr.; at Great Barrington, Mass., the fine Elizabethan design by Feruccio Vitale; at Wilmington, Del., the Jackson residence, by Shape & Bready; and "Nemours," by Carrère & Hastings. In the Middle West the following should be noted: at Rock Island, Ill., the Denkman-Hauberg residence, by Spencer & Powers; at St. Paul, Minn., the Goodkind residences in the English cottage style, by A. H. Stem; at Grosse Point, Mich., the Alger residence, by Charles A. Platt; in St. Louis, Mo., the Hermann residence, by H. Shaw, and the Thompson, Wallace, and two Davis residences, by Cope & Stewardson. At St. Louis likewise was built Adolphus Busch's "Bauernhof," or service quarters, suggested by the German type of enclosed service court and inspired from the architecture of Rothenburg, by Klipstein & Rothmann. In the extreme West the predominance of stucco tile and Mission forms, together with patio plans, is to be expected, although other European derivatives are frequent. The following deserve mention: at Pasadena, Cal., the Merrifield residence, by Myron Hunt & Elmer Grey, and the Culbertson residence by Greene & Greene; at Los Angeles, Cal., the Freeman residence, by Arthur S. Heineman, and the Rives residence, by A. F. Rosenheim; at Hillsboro, Cal., the Crocker residence, by Willis Polk & Co.; at San Francisco, the Saroni residence, by McDonald & McDonald, and the Spreckels residence, by G. A. Applegarth. Other good examples of less pretentious domestic work were produced by Bates & How at Bronxville, N. Y.; by Wm. Adams at Great Neck, L. I.; by Aymar Embury II at Litchfield and New Canaan, Conn., and Garden City, L. I., and by Hentz & Reid at Macon, Ga.

Miscellaneous Buildings. But little was accomplished in 1914 in the way of railway stations and theatres. Of the former only three need be noted: at Norfolk, Va., the Union Station, by Stem & Fellheimer; at Minneapolis, the Great Northern Station, by Charles S. Frost; and at Jersey City, N. J., the terminal of the Central Railroad of New Jersey, more exactly an engineering work, by J. O. Osgood, Engr.

The steady growth of the moving picture industry has caused a falling off in the number of new theatres. Large moving picture houses have become an established feature of New York's theatre district; among these is the Strand Theatre, by T. W. Lamb. Many of the older theatres have also been diverted to the more profitable uses of the film, but this has not dampened the energy with which smaller cinema theatres, too numerous to record here, have sprung up mushroom-like at all points. Of the larger playhouses the following should be mentioned: at Boston, the Wilbur Theatre, by C. H. Blackall; at El Paso, Texas, the El Paso Theatre, by Trost & Trost; at New York, the Bronx Opera House, by George Keister, and the Candler Theatre and office building, by T. W. Lamb. The very small intimate theatres, with seatings all of one price, continue to increase; the latest additions are the Punch and Judy Theatre, by Murphy & Dana, and the Bandbox Theatre, both in New York; and a children's playhouse, to be called the Toy Theatre, was projected for 1915.

A notable experiment in the direction of industrial group planning has been inaugurated at Cleveland, under the name of Nela Park, by the National Electric Company. The design, which is Georgian, is the work of Wallis & Goodwillie. Mention should also be made of the large Garden Pier at Atlantic City, N. J., by Simon & Bassett, and of the new $1,000,000 Bush Terminal pier at Brooklyn, N. Y., by Wm. Higginson.

There has been no public monument in 1914 at all comparable with the Maine Memorial of the year preceding. Two small private funeral monuments should be noted: the Anderson Mausoleum at Greenwich, Conn., by Charles A. Rich, with the usual classic formalism, and the Gothic cross in memory of Mrs. Wm. Astor, in Trinity Churchyard, N. Y., by Thomas Nash.

Slight progress has been made in architecture in the colonial possessions of the United States; nothing is reported from the Philippines, and the demand for purely utilitarian work has crowded out all possible growth of representative public buildings in the Canal Zone. Studies for extensive civic improvements at Albany, N. Y., have been produced by A. W. Brunner and C. D. Lay, and a modicum of progress has been accomplished toward their realization. Similar improvements on a much smaller scale are planned for Upper Montclair, N. J., by Crow, Lewis & Wickenhoefer.

American Institute of Architects. This body maintained fully its high standard of ideals, service, and efficiency, as was shown in exemplary fashion in the various reports submitted at its forty-eighth annual convention at Washington, D. C., upon town planning, fire prevention, conservation of natural resources, and historic monuments. The important matters of the universal adoption of the practice of State registration of architects as well as of a basic building law received much attention, as did also the Institute's project for the 3400-mile Lincoln Highway and its appropriate architectural treatment.

EUROPE

Building activity in Europe during 1914 may be said to have ended with the month of July; the declaration of hostilities put a sudden end to new projects, which were indefinitely postponed or abandoned. A few buildings of note were completed after August 1, but most of these were in Germany; France had only a few housing competitions to show after that date, and England produced so little that the architectural weeklies were compelled to publish extended series of buildings in past styles and of furniture.

England. In England, the most noteworthy works completed were the Neo-classic British Museum Extension, by Dr. J. J. Burnet, who followed closely the original design of Sir Robert Smirke, and the new King's College Hospital, by Wm. A. Pite, both in London. The last named adheres to the policy of decentralization recommended by a committee of the House of Lords. The buildings all branch at right angles from a 900-foot connecting corridor; they have an ultimate capacity of 600 in-patients and 303 nurses, while the out-patient waiting room alone seats 500. Other interesting new works in the British capital were: a new building for University College, by Prof. F. M. Simpson; Lloyd's Bank, by Waller & Son; the church of St. Alban's at Golders Green, by Wills & Kaula; the Norwich Union Insurance Buildings, by Howell & Brooks; the National Amalgamated Approved Societies Offices, by Beresford Pite; the Empire and India Houses and Moorgate Hall, both office buildings, by Trehearne & Norman and Richardson & Gill, respectively. The Metropolitan Railway likewise built new general offices, designed by C. W. Clark; large new schools were built for Greenwich and Battersea by A. Mitchell and Wright & Chapman. Designs were accepted for the new Paddington Baths by H. Burgess and for the immense new central offices of the Metropolitan Water Board by H. A. Hall. The competition for the new St. Paul's Bridge was unsettled at the end of the year, the design then favored being that of G. W. Browne. Edinburgh has contributed four excellent structures: Usher Hall, by Stockdale Harrison & Sons and Howard H. Thomson; the extension of the Royal Scottish Museum, by W. T. Oldrieve; the Portobello Town Hall, by J. A. Williamson; and the Edinburgh Provincial Training College for Teachers, by A. K. Robertson. The first named building was the result of a competition in which 133 designs were submitted; it is of horseshoe plan, and seats 3000 auditors. Its cost was $670,000, while the Museum extension involved an outlay of $600,000. Notable also was the completion of the western towers of St. Mary's Cathedral, Edinburgh, begun by Sir George Gilbert Scott in 1873 and now finished by J. O. and C. O. Scott.

Elsewhere in Great Britain the year saw the erection of the following: at Liverpool, West Africa House, by Briggs, Wolstenholme & Thornely, and the Midland Adelphi Hotel, by R. F. Atkinson; at Bristol, the Workmen's Hostel, by Harold Crone, and extensions of the General Hospital, by Oatley & Lawrence; at Dublin, new offices for the Local Government Board and for the Departments of Agriculture and of Technical Instruction, by Sir Aston Webb and Sir T. M. Deane; at Manchester, new premises for the Coöperative Wholesale Society, by F. E. L. Harris; at Sheffield, the Mappin Hall and Applied Science Buildings of Sheffield University, by Gibbons, Flockton & Teather; at Hull, the Hospital for Tuberculosis, by J. H. Hirst, and the Francis Reckitt Institute, by F. M. Reckitt & G. M. Carvill; at Glasgow, the new McLellan Galleries, by A. B. McDonald; at Dundee, the $250,000 Provincial Training College, by T. M. Capper; at Durham, the Durham Miners' Association building, by H. T. Gradon; at Cardiff, government offices for the Welsh Insurance Commission and Labor Exchange, by R. J. Allison; at Epsom, St. Martin's church, by Nicholson & Corlette; at Perth, a city hall, by H. E. Clifford & Lunan; at Bolton, the Miners' Hall, by Bradshaw, Gass & Hope; at Stockport, the Central Library, by the same firm; at Wolverhampton, the National Provincial Bank of England, by Bromley & Watkins; at Maidstone, new County Offices for Kent, by F. W. Ruck; at Cambridge, a new building for Downing College, by C. G. Hare; at Portsmouth, St. Cuthbert's church, by E. S. Hall. The fine King Edward VII Welsh National Memorial Sanatorium was completed by E. T. & E. S. Hall at Pontywall. At Bath and Exeter civic centres have been begun by J. Belcher & J. J. Joass and by Thomas H. Mawson & Sons respectively. The centre at Bath was to include a new spa, baths, hotel, and gardens; the whole scheme was prompted by the discovery that the local waters are highly charged with radium. Designs were also accepted for new baths at Hendon, by T. M. Wilson, for the Wesleyan Central Hall at Blackburn, by Bradshaw, Gass & Hope, and for a large public art gallery at Belfast, by J. C. Wynnes. Of interest in the field of domestic architecture were "Crow Clump" at Weybridge, Surrey, by Tubbs, Messer & Poulter, and "Dene Lodge" at Aldershot, by H. O. Creswell. The garden city and housing movements have temporarily abated. A large secondary school at Ilkeston, by G. Widdows, designed after the manner of current work in Berlin, caused much adverse comment.

In Canada the direct influence of American architecture makes itself thoroughly felt, though the English prototypes are in many cases faithfully observed. New works of the year in the Dominion were: at Ottawa, Government Buildings, by C. F. A. Voysey; at Montreal, a new Art Gallery, by Edward & W. S. Maxwell; at Toronto, the General Hospital, by Darling & Pearson. Elsewhere in the British Empire should be noted the New Law Courts at Cape Town, South Africa, by W. Hawke & W. N. McKinlay, and the Cathedral of St. Paul at Namirembe, Uganda, which is entirely of local brick and tile and has a capacity of 10,000. Designs were accepted for the pseudo-Byzantine Cathedral of St. Francis Xavier, by John C. Hawes at Geraldton, Australia; for Government Buildings, by C. F. Stevens & T. S. Gregson at Baroda, India; and for the Royal Exchange Building, by the same architects at Calcutta. While but small advance was made toward the realization of the new capital, plans by Lutyens & Baker at Delhi, India, the Australian government on the other hand issued a competition programme for a Federal Parliament House, the first of the central group of buildings in the projected colonial capital of Canberra.

Of archæological interest was the refronting of Buckingham Palace in accordance with Sir Aston Webb's scheme for the Processional Way, and the projected completion of Sir William Chambers' Somerset House.

Germany. German work to the beginning of August produced the usual number of industrial and municipal buildings. Stylistically these maintain the current German type of *Moderne Kunst*, which is the result of an intense desire to produce a national artistic expression, but which had not yet found its æsthetic balance. Interesting examples of new public architecture were the city halls at Schöneberg, by Jürgensen & Bachmann; at Kassel, by Hummel & Rothe; at Hanover, by F.

E. Scholer & Paul Bonatz; at Wittenau, by Fritz Beyer, and at Lankwitz, by the Gebrüder Ratz; also the market hall at Stuttgart, by Martin Elsaesser, a municipal bath at Neukölln, by Heinrich Best, a municipal theatre at Bremerhaven, by Oscar Kaufmann, a national bank at Wilmersdorf, by Philipp Nitze, and an office building for the Royal Marine at Charlottenburg, by Reinhardt & Süssenguth, the last of more or less traditional design with an infusion of personality and racial expression.

Other notable structures are the fine Ducal Museum at Coburg, by Rudolph Zahn, a new public home or *Bürgerheim* at Munich, by Hans Grässel, a sanatorium at Lahr a. M., by F. Gablonsky, and the extensive Royal Joachimsthalsches Gymnasium at Templin, by Bräuning. Of church buildings only a few were produced; among them the Kapelle at Flensburg, by Jürgensen & Bachmann, a large church and allied buildings at Schlachtensee, by G. Büttner, and a synagogue at Essen, by Edmund Körner. The most important warehouses and factories were the Tietz Stores at Cologne, by Wilhelm Kreis, and at Düsseldorf, by Joseph M. Olbrich; the business premises of Fischbein und Mendel, by Hans Bernouilli & L. Rinkel, and the Lohse Perfume and Soap Factory, by Paul Jatzow, both in Berlin proper.

The most important single undertaking of the year, which was set aside entirely after the beginning of the international conflict, was the project for a Royal Opera House, to be built in the Königsplatz facing Wallot's Reichstag building, Berlin. The accepted design was by Martin Dülfer. In the field of domestic architecture the following were especially successful: the Landhaus Meier-Gräfe at Zehlendorf, by W. Epstein; the Villa Bröcking at Düsseldorf, by Rudolph Zahn; the Herzfelde residence at Templin, by Lessing & Risse; the Rischmüller house at Hanover, by W. Türnau; the Landhaus Reimer and the Landhaus Auhagen, both in Dahlem and both by Heinz Lassen. The garden city and city planning movements were gaining force throughout Germany, and noteworthy experiments were completed at Zehlendorf by Paul Mebes, as well as at Hellerau and at Margaretenhöhe, near Essen, the latter for the employees of the Krupp works.

France. The report for the first seven months of the year from France was of small promise. Evidently financial stringency had made itself felt there some time before hostilities actually began. In Paris itself were built the Rothschild Hospital, by Bechmann, the Champs-Elysées Theatre, by A. & G. Perret, and premises for the Compagnie de Suez, by Nénot & Demierre, as well as a high school building by Jamme. In the Grenelle quarter several new public schools were erected by Louis Bonnier, and in the districts centring about the Rue Mercadet and the Rue de la Solidarité extensive revisions of the housing accommodations have been undertaken. The usual grist of apartment houses was much curtailed in Paris. The great Ecole des Beaux-Arts itself was converted into a military hospital and four-fifths of its students went to the front. From other parts of France were reported: a Chambre de Commerce at Chalon s. S., by Protheau & Catin; a Provincial Home for Aged Men at Villejuif, by J. Morize; a bank at Joigny, by M. Blot; a monument to the memory of Clémence Isaure at Toulouse, by Laporte-Blairsy, and the Archives Départementales de la Meuse at Bar-le-Duc, by M. & E. Royer. Of private dwellings there were but few of note: at Cambrai, by Herscher; at Luxembourg, by Pierre Funck. In Corrèze the Château du Pin has been rebuilt on the foundations of the original structure, by Henri L. C. Geay.

Other Countries. In Italy architectural progress was much reduced, owing to severe conditions of credit and general finance succeeding the Tripolitan War and other more recent difficulties which left the nation saddled with heavy responsibilities. The usual archæological work of restoration and excavation continued steadily and resulted in minor discoveries at Pompeii and Ostia. At Testaccio was undertaken an extensive general housing scheme which without doubt would have due effect upon the preparations for increases in population in the larger Italian cities. The frequency of earthquakes in certain districts had led to a deeper study of the problem of the so-called antiseismic buildings. It was found that these disturbances avoided church apses at Vespri, Monreale, Palermo, and elsewhere in the danger zone. On the assumption that the circular plan was the saving grace in these cases, Giuseppe Torre has promulgated a series of circular "antiseismic" buildings, such as banks, apartments, etc.

In Russia the only notable building was the new Cathedral at St. Petersburg, by S. S. Krichinsky, to commemorate the tercentenary of the Romanoffs; this is modeled after the manner of the seventeenth century churches at Rostoff, and has been erected at a cost of $250,000.

In Greece the replanning of Athens has received considerable attention, although nothing tangible has yet been completed. The work of laying out the city anew has been entrusted to Prof. Thomas W. Mawsen of Liverpool University.

Necrology. The losses to the architectural profession for the year are the following: in the United States—David B. Farquharson and Albert Pissis of San Francisco; Thomas C. Kennedy of Baltimore; Chas. H. Rutan of Boston; in Germany—Gabriel von Seidl; in France—Honoré Daumet, Henri de Geymüller and Emile Vaudremer; and many others less well known.

ARC LAMPS. See Electric Lighting.

ARCTIC EXPLORATION. See Polar Research, Arctic.

ARGENTINA. A federal republic of South America. The capital is Buenos Aires, coextensive with the Federal district.

Area and Population. The republic consists of 14 provinces, 10 territories, and the Federal district. There are varying estimates of the area, even those published by the Argentine authorities differ. One estimate is 2,987,356 square kilometers (1,153,417 square miles); another, 2,952,551 square kilometers (1,139,980 square miles); while a recent planimetric calculation made at the University of La Plata gives 2,789,462 square kilometers (1,077,011 square miles). The census of 1895 returned 3,954,911 inhabitants, exclusive of Indians to the estimated number of 30,000 and others 60,000; so that the total population in that year is placed at 4,044,911. It is hardly to be expected that, in lieu of a census, recent estimates of population can be very accurate. An estimate for the end of 1912 was 8,700,000; so high a figure for that date is to be regarded doubtfully. A recent census of the 10 territories is reported to show 358,738 inhabitants, as compared with 103,369 returned in 1895.

Some of the Argentine cities, Buenos Aires in particular, are increasing rapidly. In 1895, the population of Buenos Aires was 663,854; in 1904, 945,094; in October, 1909, 1,231,688; in 1914, 1,560,163. The last figure was reported as the result of an enumeration of June 1; later advices stated that several wards were omitted and that corrected returns would show a population of about 1,700,000. Buenos Aires (that is, the Federal district) has an area of 18,584 hectares, or about 72 square miles. The largest cities after Buenos Aires, with estimated population at or about the end of 1912, are Rosario, 219,677; La Plata, 106,382; Córdoba, 100,000; Tucumán, 78,695; recent estimate for Bahía Blanca, 72,706.

The number of immigrants by sea in the period 1857–1912 is stated at 4,248,355; emigrants, 1,156,871; excess of immigrants over emigrants, 2,768,081. During that period, immigrant Italians numbered 2,133,508; Spaniards, 1,298,122; French, 206,912. Immigrants and emigrants in 1911 are reported at 225,772 and 107,632 respectively; in 1912, 323,403 and 120,260. Of the arrivals in 1912, Italians numbered 165,662; Spaniards, 80,583; Russians, 20,832; Syrians, etc., 19,792; Austro-Hungarians, 6545; French, 5180; Portuguese, 4959; Germans, 4337; Britons, 3134. The number of North Americans was only 499. Marriages reported in 1911 and 1912, 48,224 and 51,582 respectively; births, 262,817 and 272,071; deaths, 125,327 and 120,480.

Education. Of the population over six years of age, about 50 per cent is illiterate. Primary education is free, secular, and nominally compulsory between the ages of 6 and 14. In 1913, the reported number of primary schools was 7247 (5894 public, 1353 private), with 22,964 teachers and 746,725 pupils. For secondary education there are 30 national colleges, with 1050 teachers and 8788 students, and 38 private schools of the same grade, with 398 teachers and 3200 students. There are 67 normal schools and various institutions for technical, commercial, and other special instruction. Higher education is provided by national universities at Buenos Aires, Córdoba, and La Plata, and provincial universities at Santa Fé, Paraná, and Tucumán. The last, established under a decree of July 2, 1912, was opened in 1914. The universities have about 7500 students, of whom the majority are at the University of Buenos Aires. Though there is no State religion, the Roman Catholic Church receives government support.

Production. The prosperity of Argentina is due to agriculture and stockraising; of these, agriculture in recent years has made the greater progress, continually forcing the grazing industry farther from the large centres of population. The development of the cultivated area is shown in thousands of hectares as follows:

	1896-97	*1900-01*	*1905-06*	*1910-11*	*1912-13*
Wheat	2,500	3,380	5,675	6,253	6,918
Linseed	360	607	1,023	1,504	1,733
Corn	1,400	1,255	2,717	3,215	3,830
Alfalfa	800	1,512	2,984	5,401	5,955
Other	510	557	682	3,994	4,551
Total	5,570	7,311	13,081	20,367	22,988

Important yields in 1912–13: wheat, 54,000,000 metric quintals; linseed, 11,300,000; corn, 50,000,000; oats, 16,820,000; raw sugar, 1,472,490. In 1913–14, the output of raw sugar was 2,761,400 quintals. Live stock (estimate of Dec. 31, 1911): cattle, 28,786,168; horses, 8,894,031; mules, 534,813; asses, 319,315; sheep, 67,383,952; goats, 4,301,955; swine, about 2,900,000. Various minerals occur, including petroleum; but there is little mining.

Commerce. Imports and exports of merchandise have been valued as follows, in thousands of pesos gold:

1895	*1900*	*1905*	*1910*	*1912*	*1913*
Imports—					
95,096	113,485	205,154	351,771	384,853	421,353
Exports—					
120,068	154,600	322,844	372,625	480,391	483,505

In pesos gold, imports and exports of merchandise in 1912 amounted to 384,853,469 and 480,391,256 respectively; in 1913, 421,352,542 and 483,504,547; imports and exports of coin and bullion in 1912, 36,077,807 and 585,621; in 1913, 47,941,425 and 43,417,484. Principal classified imports in 1912 and 1913, in thousands of pesos gold: textiles and manufactures thereof, 78,370 and 89,560; iron and steel and manufactures thereof, 45,998 and 50,040; vehicles and railway equipment, 32,799 and 37,223; earthenware, glass, earths, stone, coal, etc., 33,617 and 36,578; building materials, 31,265 and 35,776; food products, 30,140 and 34,934; oil, grease, etc., 18,446 and 23,779; chemicals, drugs, etc., 14,281 and 15,194; metals (other than iron and steel) and manufactures thereof, 14,367 and 14,258; wines, liquors, and other beverages, 14,677 and 14,042; timber, woods, straw, and manufactures thereof, 9888 and 10,829; electrical apparatus, 9309 and 10,110; paper and manufactures thereof, 9867 and 9902; agricultural implements and machinery, 12,552 and 9125; tobacco, 7595 and 7038; hides, skins, and manufactures thereof, 3903 and 4611. Subdivisions of textile import in 1912 and 1913, in thousands of pesos: cotton, 38,138 and 41,407; wool, 14,374 and 16,752; silk, 6548 and 7080; other, 19,310 and 24,321. Iron and steel in 1912 and 1913: primary and relatively primary material, 22,343 and 24,149; manufactures, 23,655 and 25,891.

Classified exports of merchandise have been valued as follows, in thousands of pesos:

	1905	*1910*	*1912*	*1913*
Agricultural ..	170,285	196,582	278,187	301,267
Pastoral	141,048	161,007	188,216	165,800
Forest	7,125	10,565	8,383	10,618
Fish and game.	791	1,429	2,608	1,817
Mineral	262	540	285	195
Miscellaneous .	3,888	2,505	2,712	3,808
Total	322,844	372,626	480,391	483,505

Classified agricultural exports in 1912 and 1913, in thousands of pesos: primary products, 264,495 and 288,232; elaborated products, 7135 and 7468; by-products, 6556 and 5567;—classified pastoral exports: live animals, 10,965 and 8770; ordinary animal products, 155,028 and 136,336; elaborated animal products, 19,780 and 18,124; by-products, 2443 and 2569. The development of the leading exports is shown in the following table, in thousands of pesos:

	1905	*1910*	*1912*	*1913*
Corn	46,586	60,261	108,908	112,292
Wheat	85,888	72,202	97,835	102,631
Linseed	26,234	44,604	84,214	49,910
Wool	64,313	58,848	58,149	45,270
Cowhides	19,077	30,711	42,129	38,532
Frozen and chilled beef	15,286	25,371	34,285	36,623
Oats	384	8,143	21,859	20,447
Rendered tallow and grease	5,321	9,537	11,315	9,945
Wheat flour	5,374	4,947	6,926	7,224
Cattle	5,160	4,056	9,140	6,849
Sheepskins	9,483	8,624	7,657	5,848
Quebracho logs	4,275	5,604	3,569	4,988
Quebracho extract	2,428	4,429	4,887	4,975
Bran	3,051	4,522	5,941	4,740
Hair	1,246	1,335	2,111	2,682
Meat extract	871	3,047	1,224	1,598
Butter	2,157	1,151	1,471	1,514
Goat skins	1,825	1,318	1,460	1,488
Canned meat	249	1,215	1,770	1,257
Meat meal, etc.	599	1,268	1,850	1,098
Whale oil	...	899	1,488	1,028
Jerked beef	3,738	1,088	1,401	658
Sundry frozen meats	856	722	1,018	910

Imports and exports of merchandise by countries, in thousands of pesos:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United Kingdom	118,669	130,887	121,378	120,368
Germany	66,942	71,312	53,995	57,916
United States	59,127	62,038	32,391	22,895
France	37,619	38,076	36,052	37,719
Italy	32,487	34,790	21,148	20,039
Belgium	20,371	21,954	37,258	32,732
Spain	11,928	12,390	3,582	4,818
Brazil	9,547	9,259	22,646	24,309
Austria-Hungary	3,477	5,938	2,897	2,246
Netherlands	3,442	4,074	16,027	22,624
Uruguay	2,497	3,196	4,714	6,301
Sweden	2,291	3,124	1,496	1,074
Switzerland	2,188	2,750	....	....
Paraguay	2,128	2,271	1,220	1,904
Norway	1,469	2,261	1,805	1,078
Canada	2,266	1,652	....	....
Cuba	1,105	1,127	788	638
Chile	571	708	2,456	1,944
For orders	....	....	114,904	117,716
Total including other	384,853	421,353	480,391	483,505

The exports "for orders" are not recorded at the Argentine ports as for specific countries, but are subject to cable or other orders as to final destination. Nearly all of these shipments ultimately reach the western European countries, in about the same proportion as the direct shipments given in the foregoing table. Therefore such countries as the United States, Brazil, and Chile occupy, in respect of Argentine exports as shown in the table, a rank above that to which they are in reality entitled. The following figures show the percentage of imports and exports as shared by the more important countries:

	Imports			*Exports*		
	1910	*1912*	*1913*	*1910*	*1912*	*1913*
U. Kingdom	31.1	30.8	31.1	21.7	25.3	24.9
Germany	17.4	16.6	16.9	12.1	11.3	12.0
United States	13.8	15.4	14.7	6.8	6.7	4.7
France	9.6	9.8	9.0	10.1	7.5	7.8
Italy	9.0	8.5	8.3	2.8	4.4	4.1
Belgium	5.6	5.3	5.2	8.2	7.8	6.8
Brazil	2.6	2.5	2.2	4.7	4.7	5.0
For orders	...	...	...	27.8	23.9	24.4

Imports and exports of merchandise at the principal ports, in thousands of pesos:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
Buenos Aires	315,162	337,643	181,767	170,445
Rosario	32,468	37,111	85,119	90,575
Bahia Blanca	11,476	13,381	69,010	55,772
La Plata	9,251	10,005	32,491	43,065
Campana	3,033	6,524	7,331	7,645
Villa Constitución	2,920	4,344	1,642	1,464
Santa Fé	3,397	3,186	13,965	24,566
San Nicolás	67	19	20,820	25,228
Concordia	384	426	10,658	8,687
Zárate	1,184	2,385	11,105	7,778

SHIPPING. The total tonnage entered and cleared at Argentine ports increased from 25,241,618 in 1900 to 33,458,188 in 1905, 44,713,712 in 1910, and 50,343,674 in 1912. The following table shows the movement at the ports in 1912, distinguishing the over-sea shipping from the total, which includes coasting and fluvial:

	Over-sea		*Total*	
	Vessels	*Tons*	*Vessels*	*Tons*
Steamers:				
Entered	4,655	11,220,540	25,726	22,360,432
Cleared	4,739	11,542,881	34,946	22,449,511
Sail:				
Entered	255	310,218	37,031	2,726,468
Cleared	245	299,075	38,753	2,607,263
Steam and Sail:				
Entered	4,910	11,530,758	62,757	25,086,900
Cleared	4,984	11,841,956	73,699	25,056,774
Total	9,895	23,372,714	136,456	50,143,674
Buenos Aires	4,450	11,770,699	39,254	19,052,093

Of the total tonnage (50,143,674) in 1912, that of Argentina was 26,536,755; United Kingdom, 16,023,641; Germany, 2,609,220; Italy, 1,257,465; France, 979,084; Norway, 532,607; Austria-Hungary, 482-046; Netherlands, 400,064; Spain, 326,056. American shipping was only 28,348 tons.

The Argentine merchant marine in 1912 consisted of 446 steamers, of 120,882 tons net, and 1241 sail, of 96,896 tons net.

COMMUNICATIONS. The length of railway in 1912 was 32,853 kilometers (20,414 miles), the government railway amounting to over 5600 kilometers, and, of the total, nearly two-thirds was broad gauge. In extent of railway, Argentina holds first place among Latin-American countries.

During the year 1914 most of the railroads in Argentina suffered financially both on account of the European War and poor crops. The Central Argentine Railway, owned for the most part in England, decided to raise $5,000,000 of new capital by the issue of 6 per cent three-year notes at par. The Buenos Aires Pacific, which paid 3 per cent dividends in 1913 passed its dividends in 1914, The Central Argentine and Buenos Aires Great Southern, and Buenos Aires Western reduced their dividends during the year, while the Argentine Railway was suffering considerable financial embarrassment, and it was reported that it might lose control of the Córdoba Central and the Entre Ríos. Nevertheless during the year the Argentine Railway ordered considerable additional rolling stock in England which would materially increase its equipment. During the financial year ended in 1914, 145 miles of extension were opened for traffic by the Buenos Aires Great Southern, bringing its total completed lines up to 3727 miles. In 1913–14 the traffic receipts declined on account of the failure of crops, while floods caused damage to the track. A transportation bridge built for the road traffic between the capital and Avellaneda and the Sud Dock was brought into operation in June. The Argentina chamber of deputies sanctioned a bill granting a concession for a railway from Rosario to Rufino.

In 1912, the length of telegraph line was 69,603 kilometers and of wire 212,237 kilometers. Of the total, the national telegraphs amounted to 30,177 kilometers of line (78,181 kilometers of wire) and railway telegraphs to 28,775 kilometers (113,554 kilometers). Post offices in 1911, 3259.

FINANCE. The unit of value is the gold peso, worth about 96.5 cents. Under the conversion law of 1899, the paper peso is current with a value of 44 per cent of the gold peso, or about 42.5 cents. For 1913, the estimated revenue was 126,464,301 pesos paper and 94,964,481 pesos gold; estimated expenditure, 420,975,866 pesos paper. Of the revenue, customs receipts were estimated at 83,830,000 pesos gold. The larger estimated expenditures, in pesos paper, were: public debt, 83,936,194; justice and public instruction, 56,857,808; interior, 46,799,301; war, 29,840,716; marine, 26,083,313; finances, 22,030,140; agriculture, 15,517,877; extraordinary expenditure, 108,135,504. For 1914, the estimated revenue and expenditure were 423,073,000 and 424,101,000 pesos paper respectively. Customs revenue has been as follows, in pesos gold:

	1905	*1910*	*1912*
Import duties...	43,615,426	76,033,647	82,887,629
Export duties...	2,413,406	3,902	1,962
Other duties ...	5,099,683	7,655,567	10,166,198
Total	51,128,515	83,693,116	93,055,789

At the end of 1912, the foreign debt stood at 297,993,975 pesos gold; internal debt, 159,751,700 pesos gold and 167,619,140 pesos paper; floating debt, 34,064,123 pesos paper; paper money in circulation, 786,399,171 pesos; total, 457,745,687 pesos gold and 988,082,434 pesos paper.

ARMY. Compulsory service in the army, which is a National Militia, is required from all citizens from their 20th to their 45th year, 10 years being spent in the "active" army or first line, 10 years in the National guard, and 5 years in the Territorial guard. The greater portion of the annual contingent serve only three months, and the remainder one year, the annual contingent of recruits being selected by lot on a territorial basis. Thus there is provided for the regular army a peace effective strength of about 24,000, with a reserve numbering some 174,000, while mobilized for war an effective strength of 2,600,000 should be forthcoming. The army is organized on a territorial basis, each of the five military districts providing a division of the first line and also a reserve division irrespective of the National guard or Territorial troops, the strength of each being about 12,000 men. The active army comprised 20 regiments of infantry, 9 regiments of cavalry, 7 regiments of field artillery, 1 horse artillery battery, 2 batteries of field howitzers, and 4 mountain batteries, 5 battalions of engineers, and a railway battalion.

NAVY. In 1914 the Argentine navy included two dreadnoughts, the *Rivadavia* and the *Moreno*, both launched in 1911, the former at the yard of the Fore River Ship and Engine Building Company, of Quincy, Mass., and the latter at the yard of the New York Shipbuilding Company, of Camden, N. J. Principal characteristics of the *Moreno:* designed speed, 22½ knots; displacement, 28,000 tons; length between perpendiculars, 575 feet; beam, 95½ feet; draft, 28 feet; main battery, 12 12-inch guns; secondary battery, 12 6-inch guns; torpedo tubes, 2; maximum thickness of armor belt, 12 inches; complement, 1050. Besides the two dreadnoughts (aggregating 56,000 tons), the navy included: 2 old coast guards (*Libertad*, 1890; *Independencia*, 1891), with a combined displacement of 4600 tons; 1 old coast guard (*Almirante Brown*, 1880), of 4200 tons; 4 armored cruisers (*Garibaldi*, 1896; *General San Martin*, 1897; *Pueyrredon*, 1898; *General Belgrano*, 1898), aggregating 27,400 tons; 3 protected cruisers (1890 to 1895), of 11,620 tons; 2 old torpedo cruisers (1890 and 1893), of 1776 tons; 2 armored river gunboats (*Rosario*, 1908; *Paraná*, 1908), of 2100 tons; 11 torpedo-boat destroyers, of 9000 tons; torpedo boats, transports, etc.

GOVERNMENT. Argentina is a federal republic, with a constitution vesting the executive power in a president and the legislative power in a congress of two houses, the Senate and the Chamber of Deputies. The president is elected for six years by indirect vote, and is ineligible for the next term; he is assisted by a responsible ministry of eight members. The Senate consists of 30 members elected indirectly for nine years, two from each of the fourteen provinces and the federal district. The Chamber is composed of 120 deputies elected for four years by popular vote. President for the term ending Oct. 12, 1916, Roque Saenz Peña; vice-president, Victorino de la Plaza. President Saenz Peña died Aug. 9, 1914, and was succeeded by the vice-president.

HISTORY. On Feb. 9, 1914, the ministry (formed in 1910) resigned, since President Saenz Peña, on account of protracted illness, had just turned over his functions to the vice-president, Dr. Victorino de la Plaza, and it was desirable that the new chief magistrate should have a free hand in choosing his ministers. The new cabinet was constituted as follows: interior, Señor Miguel Ortiz; foreign affairs and worship, José Luis Muratore; finance, Cenrique Carbó; justice and education, Tomás R. Cullen; agriculture, Horacio Calderón; public works, Manuel Moyano; war, General Vélez; marine, Rear-Admiral P. Saenz Valiente. In May, Vice-President Plaza opened Congress and delivered his vice-presidential message, commenting on the financial situation, and the economies which would reduce the budget by more than $11,000,000, to counterbalance the decrease of customs revenues. He called attention to the fact that Argentina was the leading country in South America, and the ninth in the whole world, in the mileage of her railways. The budget for 1915 showed a decrease of 50,000,000 paper *piastres*. See MEXICO, paragraph *A. B. C. Mediation*, and INTERNATIONAL ARBITRATION AND PEACE.

ARGYLL, JOHN DOUGLAS SUTHERLAND CAMPBELL, ninth DUKE OF. Died May 2, 1914. He was born in London in 1845, the son of the eighth Duke of Argyll and of Elizabeth, eldest daughter of the second Duke of Sutherland. He was educated in Edinburgh Academy, St. Andrews, and Trinity College, Cambridge. He was a member of Parliament from 1868 to 1878. In 1871 he married Princess Louise, fourth daughter of Queen Victoria. He was appointed Governor-General of Canada in 1878, and held this position until 1883. From 1895 to 1900 he represented South Manchester in Parliament, and in the latter year he succeeded his father in the dukedom. In addition to his title, Duke of Argyll, he held many others, among them being Marquis of Lorne and Kintyre, Earl of Campbell and Cowal, Viscount of Lochow and Glenisle, Baron Inveraray, Mull Morvern and Tiry. He was Chancellor of Order of Sts. Michael and George; Hereditary Master of the Royal Household, Scotland; Hereditary High Sheriff of the County of Argyll; Admiral of the Western Coast and Isles. He was also Keeper of the Great Seal of Scotland and of the Castles of Dunstaffnage, Dunoon, and Garrick. From 1892 until his death he was Lord-Lieutenant of Argyllshire and Governor and Constable of Windsor Castle. He was a prodigious worker. He wrote poetry, works of biography, history, travel, and drama, and a grand opera. Among his published works are: *The United States of America after the War; Memories of Canada and Scotland; Tales and Poems; Psalms in English Verse; Life and Times of Queen Victoria;* and, *Intimate Letters of the Eighteenth Century.* He received the Order of the Garter at the coronation of King George, and was selected to edit the letters of King Edward. He is succeeded in the dukedom by Niall Diarmid, son of the late Lord Walter Campbell and cousin of the ninth Duke.

ARIZONA. POPULATION. The estimated population of the State on July 1, 1914, was 239,053. In 1910 it was 204,354.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. Bu.*	*Value*
Corn	1914	18,000	576,000	$ 691,000
	1913	17,000	476,000	524,000
Wheat	1914	31,000	868,000	1,085,000
	1913	29,000	928,000	1,021,000
Oats	1914	8,000	336,000	235,000
	1913	7,000	301,000	150,000
Barley	1914	35,000	1,260,000	756,000
	1913	38,000	1,482,000	1,082,000
Potatoes	1914	1,000	110,000	132,000
	1913	1,000	75,000	101,000
Hay	1914	142,000	a 454,000	3,995,000
	1913	135,000	540,000	5,940,000

a Tons.

MINERAL PRODUCTION. Arizona ranks first among the States in the production of copper, and nearly 90 per cent of the total value of all her mineral products is represented by the copper contained in the ores mined in the State. Arizona was one of the few States in which the production of copper in 1913, both in quantity and value, exceeded that of 1912. The gain in value, however, was less than half, proportionately to the increase in output, the total production having shown an increase of more than 10 per cent in quantity, with a gain of less than 5 per cent in value. The recoverable copper content of the ores mined in the State increased from 365,038,649 pounds, valued at $60,231,377 in 1912, to 407,923,402 pounds, valued at $63,228,127 in 1913.

Second in importance among the mineral products of the State is gold, in the production of which Arizona ranks seventh. The total production of gold in 1913 was 194,657 fine ounces, valued at $4,023,911, compared with 181,997 fine ounces, valued at $3,762,210 in 1912. The silver production, which is largely a by-product from the smelting of copper ores, amounted in 1913 to 3,948,091 fine ounces, valued at $2,384,647, compared with 3,490,387 fine ounces, valued at $2,146,588 in 1912. Some lead and zinc are also produced in the State, the former being in value a little over $700,000 and the latter nearly $530,000 in 1913. According to the estimates of the United States Geological Survey, the value of the gold, silver, copper, lead, and zinc produced in 1914 decreased over 16 per cent compared with the production of 1913. This was due chiefly to the lower price of copper on account of the European war. The total value of these minerals in 1914 is estimated at $59,000,000, compared with $70,875,027 in 1913. There was very little decrease, however, in the output of copper, lead, and zinc and considerable decreases were made in gold and silver. The gold production in 1914 was valued at $4,570,000, while silver made a record production of 4,469,000 ounces. The output of copper decreased from 407,923,402 pounds in 1913 to about 388,000,000 pounds in 1914. The output of lead was practically the same as that of 1913, or about 16,000,000 pounds. The zinc production was also about equal to that of 1913.

The nonmetalliferous products of the State are cement, clay wares, fluorspar, gypsum, gems, lime, sand and gravel, silica, and stone. The combined value of these, however, was little more than $500,000 in 1913. Small quantities of quicksilver and tungsten ores are also produced. The total value of the mineral products of the State increased from $67,497,838 in 1912, to $71,429,705 in 1913.

EDUCATION. The total school population of the State in 1914 was 86,282. The total enrollment in the public schools was 43,926, and the average daily attendance was 29,898; the teachers numbered 1101, and the average monthly salary of these was $114.03.

TRANSPORTATION. The total railway mileage operated in Arizona on June 30, 1914, was 2345. The roads having the longest mileage include the following: Atchison, Topeka and Santa Fe, 978; Southern Pacific, 537; Arizona Eastern Railroad, 378; El Paso and Southwestern, 263.

FINANCE. The total receipts for the fiscal year ending June 30, 1914, amounted to $2,770,571. The disbursements for the same period amounted to $3,051,356. There was in the treasury in the beginning of the fiscal year a balance of $1,034,083, and at the end a balance of $753,298. The funded debt of the State consists wholly of bonds, of which the greater part were issued for funding purposes, amounting in 1913 to $3,528,275. To provide for the payment of the principal and interest, the State board of equalization determines the tax levies of the several counties and cities. The floating debt of the State consists of outstanding warrants, the amount of which on June 30, 1913, was $66,096. The per capita debt in 1913 was $4.19, a decrease from $11.19 in 1908.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State are as follows: The State Prison at Florence, State Industrial School at Fort Grant, State Hospital for the Insane at Phoenix, Home for Aged and Infirm Arizona Pioneers at Prescott, the Florence Crittenden Home at Phoenix, Arizona Children's Home at Phoenix, and St. Luke's Home at Phoenix. The latter is a tubercular sanatorium conducted by the Protestant Episcopal Church. In 1913 provision was made for a board of pardons and paroles, to replace the present board of commissioners of paroled prisoners, which previously had charge of these matters.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914 as the sessions are biennial and the last was held in 1913. The date for the next session is Jan. 11, 1915. Elections were held for Governor and United States Senator. Governor Hunt was a candidate for reëlection as was also Senator Marcus A. Smith, and both were renominated. The elections on November 3 resulted in the election of Governor Hunt, who received 35,226 votes, as against 17,602 votes for Cameron, his Republican opponent. For the Senate Smith received 25,800 votes, against 9183 for Hubbell, the Republican candidate. The Progressive candidate received 2608 votes. The constitutional amendment providing for Prohibition was submitted to the people at this election and it was carried by about 3000 votes.

The validity of the alien land laws passed by the Legislature of 1913 to prevent Japanese from settling in the State was before the United States District Court in California during the year. No decision had been rendered at the close of the year, but it was a very general opinion that it would be adverse to the laws. The measure passed corresponded closely to those first passed in the California legislature and afterwards abandoned. They directly prohibited aliens who had not declared their intention of becoming citizens from acquiring land. At the time of its passage protests were made against the bill by the Japanese Association of Arizona, but no active measures were taken against its passage by the United States Government.

STATE OFFICERS, 1915. Governor, George W. P. Hunt; Secretary of State and Lieutenant-Governor, Sidney P. Osborn; Treasurer, Mitt Sims; Auditor, J. C. Callaghan; Adjutant-General, Charles W. Harris; Attorney-General, Wiley E. Jones; Superintendent of Education, C. O. Case; Commissioner of Insurance, to be appointed—all Democrats. Supreme Court: Chief Justice, Alfred Franklin; Associate Justices, D. L. Cunningham, Henry D. Ross; Clerk, Clay F. Leonard—all Democrats.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	18	35	53
Republicans	1	0	1
Democratic majority..	17	35	52

Vote of the State Since Admission:

	Dem.	*Rep.*	*Soc.*	*Proh.*	*Plu.*
1911..Governor..	11,123	9,166	1,247	79	1,957 D

The representatives in Congress will be found *in the section Congress*, article UNITED STATES.

ARIZONA, UNIVERSITY OF. A State institution for higher education, founded at Tucson, Ariz., in 1885. The number of students enrolled in all departments of the university in the autumn of 1914 was 249, and the faculty numbered 43. R. B. von Kleinsmid was appointed president in 1914 to succeed Arthur H. Wilde, resigned; four members of the faculty were on sabbatical leave during the year; Charles W. Clapp, of the Canadian Geological Survey, was appointed professor of geology; Lloyd L. Dines was appointed associate professor of mathematics, and Colonel George LeRoy Brown was appointed professor of military science and head of the military department. The university is supported by State appropriations. The library contains about 22,000 volumes.

ARKANSAS. POPULATION. The estimated population of the State on July 1, 1914, was 1,686,480. In 1910 the population was 1,574,449.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. Bu.*	*Value*
Corn	1914	2,400,000	42,000,000	$33,600,000
	1913	2,475,000	47,025,000	36,680,000
Wheat ...	1914	125,000	1,625,000	1,609,000
	1913	101,000	1,313,000	1,182,000
Oats	1914	260,000	6,240,000	3,307,000
	1913	240,000	6,360,000	3,371,000
Rye	1914	1,000	10,000	10,000
	1913	1,000	12,000	11,000
Rice	1914	92,580	3,685,000	3,316,000
	1913	104,700	3,769,000	3,392,000
Potatoes ..	1914	25,000	1,500,000	1,455,000
	1913	25,000	1,800,000	1,800,000
Hay	1914	320,000	*a* 336,000	4,334,000
	1913	320,000	384,000	5,184,000
Tobacco ..	1914	700	*b* 427,000	77,000
	1913	800	520,000	85,000
Cotton ...	1914	2,525,000	*c* 1,040,000	32,858,000
	1913	2,502,000	1,073,000	59,580,000

a Tons. *b* Pounds. *c* Bales.

MINERAL PRODUCTION. Arkansas is first among the States in the production of two minerals—bauxite and novaculite, the former being the ore of aluminum, and the latter the source of the larger part of the oilstones produced in the United States. The principal mineral product, however, is coal, the value of which constitutes over 50 per cent of the State's total. The total value of all the mineral products in 1912 was $6,258,726, compared with a value of $6,780,760 in 1913. The coal production in 1913 was 2,234,107 short tons, valued at $3,923,701, compared with 2,100,819 short tons, valued at $3,582,789 in 1912. Approximately 70 per cent of the total production of coal comes from Sebastian County. Bauxite is second among the mineral products. In 1913 the stone quarries of the State furnished products valued at $535,050. The only metalliferous products of Arkansas besides bauxite are lead, zinc, and manganiferous ores. Other mineral products are fuller's earth, gems and precious stones, lime, mineral waters, natural gas, phosphate, rock, and slate.

TRANSPORTATION. There were in the State in 1913, 4797 miles of main track and 764 miles of side track. There were in addition ten operating electric railways, with 113 miles of track.

EDUCATION. The total school population of the State on June 30, 1914, was 635,462, with a total enrollment in the public schools of 439,624, and an average daily attendance of 298,597.

The male teachers numbered 4531 and the female 5830, the average yearly salary of all teachers being $317.32. The total number of school houses was 6429 in 1914, and 341 new buildings were erected, the total value of school property in the State being $11,956,315, and the expenditures for schools $4,360,965. The schools of the State have shown remarkable progress in recent years.

Finance. On Sept. 30, 1912, the funded debt of the State consisted of only one series of bonds issued in 1889, at which time the total debt of the State was refunded; these bonds, amounting to $1,250,000, are all held by the permanent school fund. The State has no floating debt. The per capita debt in 1912 was $0.76. The receipts for the fiscal year 1911–12 were $6,899,-247, and the expenditures were $6,734,915, leaving a balance at the end of the year of $800,770. The income is derived chiefly from direct tax on all property, and the expenditures are chiefly for charitable and State institutions.

Charities and Corrections. The charitable and correctional institutions of the State are the State Hospital for Nervous Diseases at Little Rock, Deaf Mute Institute at Little Rock, School for the Blind at Little Rock, Confederate Soldiers' Home at Sweet Home, the Arkansas State Penitentiary and State Farm, and the Arkansas Reform School at Little Rock. The charitable institutions are under the control of a board of trustees on charitable institutions, and the correctional institutions by the State penitentiary commissioner.

Politics and Government. There was no meeting of the Legislature in 1914 as the sessions are biennial and the last was held in 1913. State elections were held for Governor and United States Senator. Both Governor Hays and Senator Clarke were candidates for reëlection and, at the primaries held on March 24, both were renominated. At the State election held on September 14, Governor Hays was reëlected with 94,096 votes, against 30,987 for Kenney, his Republican opponent. Senator Clarke received 33,449 votes, compared with 22,297 for Meyers, his Republican opponent. The Progressives made no nominations in the campaign.

State Officers, 1915. Governor, George W. Hays; Lieutenant-Governor, ——; Secretary of State, Earle W. Hodges; Treasurer, Rufus G. McDaniel; Auditor and Insurance Commissioner, L. L. Coffman; Attorney-General, W. L. Moose; Superintendent of Education, Geo. B. Cook; Commissioner of Agriculture, J. H. Page; Commissioner of Public Lands, W. B. Owen—all Democrats. Supreme Court: Chief Justice, Edgar A. McCulloch; Justices, F. G. Smith, C. D. Wood, William F. Kirby, and Jesse C. Hart; Clerk of the Court, P. D. English—all Democrats.

State Legislature, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	36	97	133
Republicans	0	3	3
Democratic majority.	36	94	130

The representatives in Congress will be found in the section *Congress*, article United States.

ARKANSAS, University of. A State institution for higher education, founded at Fayetteville, in 1871. The enrollment in all departments in 1914 was about 800, and there were 80 members in the faculty. The institution is supported by appropriations from the State legislature, and the annual income is about $20,000. The library contains 20,000 volumes. The president is J. C. Futrall, M.A.

ARMAMENT. See Battleships.

ARMIES. See Military Progress, and section *Army*, under the various countries.

ART. See Architecture; Music; and Painting and Sculpture.

ART EXHIBITIONS. See Painting and Sculpture.

ARTIFICIAL DIAMONDS. See Chemistry, Industrial.

ARTIFICIAL WOOD. See Chemistry, Industrial.

ARTILLERY. See Military Progress, and section *Army*, under United States, and under various foreign countries.

ASBESTOS. The production of asbestos in the United States is small, but in manufactured asbestos products that country surpasses any other. The total output of the mineral in 1913 in the United States was about 1100 short tons, valued at $11,000, all of which came from two producers in Georgia and one in Arizona. The largest production made was in 1911, when the output amounted to 7604 short tons, valued at $119,935. The world's supply of asbestos is drawn largely from the Province of Quebec in Canada, although the rapid development of the Russian output was making that country an important factor in the world's supply. The total output in Canada in 1912 was 111,561 short tons of asbestos and 24,740 short tons of asbestic. In the same year there were produced in Russia 18,138 short tons of asbestos. There were imported into the United States in 1913, 86,737 short tons of unmanufactured asbestos, valued at $1,928,705, and manufactures of asbestos valued at $389,664. For the fiscal year ending June 30, 1914, the imports of unmanufactured asbestos amounted to 76,524 tons, valued at $1,678,736; and manufactures of this material valued at $391,337.

ASIA. See Anthropology; Explorations; and articles on the various Asiatic countries.

ASIA MINOR, Explorations in. See Archæology.

ASPHALT. The production of natural asphalt, including all the varieties of natural asphalt, asphaltic sandstone, and limestone, amounted in 1913 to 92,604 short tons, valued at $750,713. This was a decline from 95,166 short tons, valued at $865,225 in 1912. This decline in natural products was undoubtedly due to the fact that not only oil asphalt dominates the industry but that its relative importance is increasing at the expense of the natural varieties. In 1913, 436,586 short tons of oil asphalt were produced in the United States, compared with 354,344 short tons in 1912. The value of the product in 1913 was $4,531,657. The chief States producing oil asphalt are California, Kentucky, Oklahoma, and Utah. The chief producing countries are Trinidad, Italy, and Venezuela. The largest quantity is produced in Trinidad. The imports of asphalt of all kinds in the United States in 1913 amounted to 228,178 short tons, valued at $910,611. The exports were valued at $1,640,027. This included unmanufactured, and manufactures of, asphalt. Under the law which became effective Oct. 4, 1913, all asphalt except manufactured products is imported free of duty. From that date, and up to June 30, 1914, there were imported 139,093 tons of asphaltum and bitumen, valued at $687,299. From July 1 to Oct. 3, 1913, manufactured products of asphalt to the extent of 41,596 tons and valued at $231,088 were imported.

ASQUITH, Herbert Henry. See Great Britain, *History, passim.*

ASTRONOMY. Steady progress in all branches of astronomical science marked the year 1914, although, owing to the outbreak of war, the activities of some of the European observatories appear to have been seriously curtailed. A new satellite—the ninth—of Jupiter was reported to have been discovered, but the details were meagre, and the discovery needs confirmation. Several expeditions were dispatched to stations in Russia and other countries along the line of totality for the purpose of observing the total eclipse of the sun which occurred on August 21. Although the radiation in the green due to coronium was reported to be absent, the eclipse was noteworthy on account of the discovery of a new coronal radiation in the red. For the first time since 1903 the number of new minor planets discovered fell below fifty. Encke's comet, first seen in 1789, and recognized as periodic thirty years later, made its 39th reappearance, and four new comets were found.

Mount Wilson Solar Observatory. In his report of the work carried on by himself and his associates during 1913 at the Mount Wilson Solar Observatory, Professor George E. Hale summarized the principal results of the year, and again emphasized the importance of those obtained from the coöperation of foreign astronomers in the work of the observatory. Professors Kapteyn of Groningen, Hertzsprung of Potsdam, and Störmer of Christiania continued their researches of the preceding year. The first-mentioned found strong evidence of the absorption of light in space. His conclusions are summarized briefly as follows: On the average the fainter stars are redder than those which are brighter, and the redder the stars the more distant, apparent magnitudes and spectral lines being the same. Professor Hertzsprung's work on the effective wave lengths of the light of faint stars also had a direct bearing on the question of the absorption of light in space; the work of reducing the negatives obtained is still proceeding. Professor Störmer's theoretical investigations of the nature of the vortices in sun spots led to the view that the hydrogen whirls of the flocculi are not current lines but magnetic lines of force due to a low-lying whirl, to the spiral current lines of which they are orthogonal. Taking into account Professor Hale's investigations on the magnetic phenomena of sun-spots and Mr. St. John's work on the radial motion of the spot vapors, Störmer reached the conclusion that the sun's magnetic field is produced by the motion in the vortex of negatively charged particles. Since his return to Europe, he has calculated the magnetic field over a spot vortex, and has estimated the dimensions of the vortex necessary to harmonize with the observed facts.

Professor Kohn, of Munich, spent several months at the observatory for the purpose of testing his microphotometer with reference to its applicability to the study of solar and stellar spectra. By means of this instrument, which was devised by Professor Koch in 1912, it is possible to obtain an automatic record of the variations in the density of a photographic negative. It consists essentially of a microscope, on the stage of which is mounted the photograph of the spectrum to be investigated, and a photo-electric cell which replaces the eyepiece of the microscope. As the image of the silver deposit in the negative is made to move across a slit in the upper focal plane of the objective, the variations in the intensity of the illumination cause corresponding changes in the electromotive force developed in the photo-electric cell, and these in turn are indicated by the movements of a string electrometer. The automatic registration of the changes is obtained by projecting an image of the string across a second slit placed immediately in front of a photographic plate which moves at right angles to the slit. In this way, personal errors are entirely eliminated, and the results so far obtained give promise that the instrument will prove to be absolutely indispensable in the prosecution of spectroscopic research of all kinds.

The Sun's Magnetic Field. In the Annual Report of the Director of the Mount Wilson Solar Observatory for 1913, Prof. George E. Hale announced that his researches on the sun's general magnetic field left no doubt as to its existence and order of intensity. By choosing a period of minimum solar activity for the investigation, the disturbing influences due to the intense magnetic fields in sun spots were eliminated. The results so far obtained warrant the conclusion that the sun is a magnet, with its north and south poles situated at or near the corresponding poles of rotation, and that the intensity of the field is about 80 times as great as that of the earth and about one-hundredth of that of the most intense sun spots. As most of the solar lines which exhibited the Zeeman effect are produced at low levels in the solar atmosphere, while others, which show large displacements in the laboratory, failed to give any indication of the sun's field, it is inferred that the intensity of the field falls off very rapidly in receding from the surface of the photosphere. It was suggested that the correspondence between the polarities of the sun and the earth may be found to have an important bearing on the various theories which have been propounded to account for the earth's magnetism, but at the same time it was pointed out that the analogy in regard to the rates at which the fields fall off is not complete.

Radial Velocities in Sun Spots. Mr. Chas. E. St. John continued his researches on the radial motion of the vapors in the solar atmosphere overlying sun spots. The results obtained were in entire accord with Evershed's hypothesis that the displacements of the spectrum lines observed are due to a movement of the solar vapors tangential to the surface of the sun and radial to the axis of the spot vortex. Velocity inversion occurs at an elevation of about 4000 kilometers, the flow above that level being inward toward the centre of the spot while below it is outward, and the velocities increase with the distance from the layer in which the inversion takes place. Considerations of the amount of energy involved in the inflow and outflow led to the conclusion that the actual vortex is deep-seated, its head being situated near the reversing layer, and the inflow from the chromosphere, in which vortex motion is sometimes observed, is regarded as a secondary effect depending upon the strength of the magnetic field and the rotational energy of the vortex proper.

TOTAL ECLIPSE OF THE SUN. Owing to the great progress of solar physics during the past twenty years, observations made during a total eclipse of the sun are of less importance than they were formerly, and it has been seriously questioned whether the gain in our knowledge of the sun is at all commensurate with the expenditure of time and money involved in fitting out solar eclipse expeditions. Nevertheless, on account of the comparative ease with which suitable stations could be reached, several expeditions were planned for the purpose of viewing the total eclipse of the sun which occurred on August 21. The line of totality stretched from Northern Canada to the northwest coast of India, crossing Greenland, Norway, Sweden, Russia, Eastern Asia Minor, and Western Persia. The majority of the expeditions originally contemplated made all arrangements to proceed to Feodosia, in the Crimea, where the weather conditions gave greatest promise of being favorable. Among these were parties from the United States, Great Britain, France, Germany, Spain, and Russia. Other parties planned to make their headquarters and establish their observing stations at Kiev, Minsk and Riga, in Russia, at Alsten Island, off the coast of Norway, and at Hernösand and Strömsund, in Sweden. Owing, however, to the outbreak of the European war, some of the expeditions were abandoned altogether, while others, which started, were unable to proceed to their stations. Apart from the Russian parties, only six expeditions—two British, two French, one American, and one Spanish—succeeded in reaching their destinations. All agreed in reporting the corona as of intermediate type, i.e., of the square type, there being no large equatorial streamers or streamers in the regions of the solar poles. The green radiation attributed to coronium was entirely absent, but a new intense and sharp radiation, which appears to be directly associated with periods of minimum solar activity, was observed in the red portion of the spectrum.

SOLAR CONSTANT OF RADIATION. In his address as retiring president delivered before the Philosophical Society of Washington on January 3, Dr. C. G. Abbot discussed the general problem of solar radiation, and described the methods employed by himself and other observers of the Smithsonian Astrophysical Observatory in determining the solar constant. The mean value of this constant, as derived from 690 measurements made at Washington, Mount Wilson, Mount Whitney, and Bassour, Algeria, during the period 1902–13, was found to be 1.933 calories per square centimeter per minute, and is believed to be accurate to within one per cent. There is a possibility that one or two per cent has been lost in the ultra-violet region of the spectrum through absorption by ozone in the upper atmosphere. The constant is subject to a long-period variation corresponding to the sun-spot period, and a more irregular fluctuation of about ten per cent, with a period of about a week or ten days, was detected, which is attributed to changes in the sun's emission.

SUN SPOTS. The minimum in the present cycle of solar activity was reached in 1913, when the sun's disc was freer from spots than it has been during any year since 1810. A recrudescence of activity was noted during the year.

From an examination of the sun spot records made at the Zurich Observatory during the period 1876–1911, Fräulein Frenkel found indications of two short-period variations in the frequency of sun spots, of 68.5 days and 200 days respectively, and suggested a possible connection with the rotation periods of the two inner planets, Mercury and Venus.

JUPITER. The Great Red Spot was under observation and showed an increased velocity, its period of rotation being 9 hours, 55 minutes, 35 seconds, or about 6 seconds shorter than the period noted in 1912. The equatorial current was also found to have increased its rate of movement, the rotation being accomplished in 9 hours, 50 minutes, 11 seconds. The great South Temperate Spot is now in advance of the red spot, and as it is increasing in length, it will probably eventually extend all round the planet, and obliterate the previously brilliant south tropical zone.

A PROBABLE NEW SATELLITE OF JUPITER. Nicholson announced the discovery at the Lick Observatory of a small object near Jupiter on July 21, which appears to be a new satellite—the ninth—of the planet. It is said to be of the 19th magnitude, and is therefore probably smaller than the eighth satellite discovered by Melotte in 1908, which is of the 17th magnitude and only about 40 miles in diameter. Its motion is stated to be retrograde, and its period is estimated to be about three years.

ROTATING NEBULA. Professor Slipher, of the Lowell Observatory, Flagstaff, Ariz., announced that he had obtained spectroscopic evidence of rotation in the Virgo Nebula, the velocity indicated being fully 1000 kilometers per second. The prevalence of spiral forms among the nebulæ has long been held to indicate that the nebulæ in general possess motion of rotation about an axis, and the important discovery just made tends to confirm this belief.

NUMBER AND TOTAL LIGHT OF THE STARS. In an interesting article which appeared in *Nature*, Mr. S. Chapman gave an account of the important conclusions concerning the number and light of the stars to which his study of the Franklin-Adams star charts had led. This fine series of charts comprises 206 plates, covering the whole sky and showing, in most cases, stars down to the seventeenth magnitude. By counting the stars in 25 uniformly distributed sample areas on each plate, and classifying them according to the size and grayness of their images, it was possible to form an estimate of the number of stars of each magnitude. While the very brightest stars show great irregularity of grouping, it is a matter of simple visual observation that the fainter naked-eye stars are more numerous in the plane of the Milky Way than at the galactic poles, the ratio being about two to one. This ratio becomes greater for the telescopic stars from the fifth down to the ninth magnitude, being about three or four to one, and it has been held by Kapteyn and others that for still fainter stars the galactic condensation increases with increasing faintness. Pickering, on the other hand, maintains that, down to the thirteenth magnitude, there is no increase in the condensation, and the figures adduced by Chapman for stars down to the limit of the charts strongly support this view. Starting from this, Chapman shows that it is possible to calculate the total number of stars, and estimates that it lies somewhere between 1000 million and 2000 million, half of which are brighter than a magnitude of about 23 or 24, the faintest magnitude that could possibly be photographed with the largest telescope at present available. When the total light of the stars of each magnitude is estimated, the result is less impressive. Assuming the correctness of the formula by which the number of the stars is calculated, it is possible to proceed still further and to calculate the total intensity of all the stars brighter than a given magnitude, and it is found that the total light of the stars is equal to that of 700 stars of the first magnitude, or of a single star of magnitude -6.1. A further interesting comparison was made with the light of the full moon, and of the standard candle. The total light of the stars was estimated to be about one-hundredth of that of the full moon, and equal to that of an ordinary 16-candle-power electric lamp at a distance of forty-five or fifty yards.

VARIATION OF LATITUDE. The results published by the International Latitude Service for 1912 and 1913 showed that the amplitude of variation has decreased considerably since the beginning of 1912. A chart showing the wandering of the pole for the period 1906–11 will be found on page 58 of the YEAR BOOK for 1912.

Boccardi published tables showing that the small diurnal variations of the latitude can be distinctly attributed to the attraction of the moon.

MINOR PLANETS. Since the last issue of the YEAR BOOK, sixty-three minor planets have been announced as new. Nine of these were reported in December, 1913, three—1906 WF^a, WF^b, WF^c—having been identified on reëxamination of negatives taken as far back as 1906 by Kaiser at Heidelberg; the remaining six are provisionally designated by the letters 1913 TR to 1913 TW. Nine others were photographed in 1913, but their character was only recognized later on examination of the plates. They were all found on negatives taken by Lampland at the Lowell Observatory at Flagstaff, Ariz., and were designated 1913a to 1913i by their discoverer. Owing, however, to the fact that insufficient observations were obtained, they appear to have failed of recognition by the Recheninstitut at Berlin. The remaining 45—actually discovered in 1914—received the provisional designations 1914 TX to 1914 VR. It is to be remarked that this is the first year since 1903 in which the number of minor planets announced as new has failed to reach the half-century mark; the number in 1903 was 47. Disregarding the Flagstaff planets, of the 54 reported since the issue of the YEAR BOOK for 1913, 34 were announced from the Konigstühl Observatory at Heidelberg by Professor Wolf (10), and his assistants, Kaiser (14), Reinmuth (7), and Massinger (3). Of the remaining 20, 10 were discovered by Neujmin (Simeïs), 3 each by Palisa (Vienna), and Thiele (Bergedorf), and 1 each by Lagrula (Nice), Le Morvan (Paris), and Metcalf (Winchester, Mass.), while 1 (UL) was found independently by Lagrula and Palisa.

Permanent numbers were assigned to the following minor planets:

Number	*Temporary Designation*	*Discoverer*	*Date of Discovery*
755	1908—CZ	Metcalf	1908—April 6
756	DO	Metcalf	April 26
757	EJ	Metcalf	Sept. 30
758	1912—PE	Wood	1912—May 18
759	1913—SJ	Kaiser	1913—Aug. 26
760	SL	Kaiser and Neujmin	Aug. 28
761	SO	Kaiser	Sept. 8
762	SQ	Neujmin	Sept. 8
763	ST	Kaiser	Sept. 25
764	SU	Kaiser	Sept. 26
765	SV	Kaiser	Sept. 26
766	SW	Kaiser	Sept. 29
767	SX	Metcalf	Sept. 23
768	SZ	Neujmin	Oct. 4
769	TA	Neujmin	Oct. 6
770	TE	Massinger	Oct. 31
771	TO	Rheden	Nov. 21
772	TR	Massinger	Dec. 19
773	TV	Kaiser	Dec. 22
774	TW	Le Morvan	Dec. 19
775	1914—TX	Lagrula	1914—Jan. 6
776	TY	Massinger	Jan. 24
777	TZ	Kaiser	Jan. 24
778	UA	Kaiser	Jan. 25
779	UB	Neujmin	Jan. 25
780	UC	Neujmin	Jan. 25
781	UF	Neujmin	Jan. 25
782	UK	Palisa	March 18
783	UL	Lagrula and Palisa	March 18
784	UM	Metcalf	March 20
785	UN	Massinger	March 30
786	UO	Kaiser	April 20
787	UQ	Neujmin	April 20
788	UR	Kaiser	April 28
789	UU	Neujmin	June 24
790	1912—NW	Wood	1912—Jan. 16
791	1914—UV	Neujmin	1914—June 29

Eleven of these numbered planets were identified with others previously known. They are: 764 (1913 SU) = 1908 FD = 1902 KP; 767 (1913 SX) = 1902 JT; 772 (1913 TR) = 1902 KM; 773 (1913 TV) = 1910 JS; 774 (1913 TW) = 1908 FG (very probably); 776 (1914 TY) = 1910 KA; 780 (1914 UC) = 1909 GH; 781 (1914 UF) = 1908 BZ; 782 (1914 UK) = 1911 LZ; 783 (1914 UL) = 1911 MO = 1910 JM.

Other identifications were as follows: 1913 SP = 492, Gismonda; 1913 TD = 639, Latona; 1913 TJ = 486, Cremona (very probably); 1913 TN = 567, Eleutheria; 1913 TP = 294, Felicia; 1913 TT = 770 (1913 TE).

Names were assigned to the following minor planets: 712, Boliviana; 728, Leonisis; 748, Simeisa; 749, Malzovia; 751, Faina; 758, Mancunia; 771, Libera.

COMETS. The periodic comets due to return in 1914 were Encke's (first observed in 1789), Tempel-Swift's (1869 III), and Metcalf's (1906 VI). Of these only Encke's was reported. It is noteworthy as being only the second comet to be recognized as periodic, the first being Halley's Comet. This fact was established by Pons in 1819, and since then the comet has been detected at every reappearance, the present being the thirty-ninth since its discovery. This year it was first seen by Barnard at the Yerkes Observatory on September 17. It is designated 1914d, and made its perihelion passage on December 4. As usual, when its perihelion passage occurs in winter, it was a fairly conspicuous object.

Tempel-Swift's Comet, first observed by Tempel at the end of 1869, and recognized as periodic by Swift in 1880, has a period of 5.68 years. It was not seen in 1886, 1897, or 1903 when it was due, but it was well observed in 1891, and was also seen on the occasion of its last reappearance in 1908. It was not detected in 1914. Metcalf's Comet has a period of 7.6

years. It was first seen on Nov. 14, 1906, having passed through perihelion on October 11 in that year. It should therefore have made its first reappearance this year, but failed of detection.

Four new comets were discovered in 1914. These were: 1914a, discovered by Kritzinger at Bothkamp, Germany, on March 29. It passed through perihelion on May 31. When first seen, it was of magnitude 9.5, and possessed a fairly conspicuous tail. Its brilliancy increased slowly, reaching its maximum (magnitude 8.4) on May 12.

1914b, discovered by Zlatinsky at Mitau, Russia, on May 15. It made its perihelion passage on May 8. It was reported as showing a stellar nucleus of the fourth magnitude, with a tail 12 degrees in length, but its brightness rapidly declined. Slipher announced that its spectrum showed long carbon and cyanogen bands, and resembled closely those exhibited by the comets discovered by Brooks in 1911 and Gale in 1912. Perrine called attention to the similarity between its elements and those of Comet 1790 III, discovered by Caroline Herschel, but the identification does not appear to be complete.

1914c, discovered by Neujmin at Simeïs, Crimea, on June 29. It was of magnitude 12.5 when first detected, and soon became very faint. It passed through perihelion on February 11.

1914e, discovered by Lunt at Johannesburg, South Africa, on September 18, and independently by several observers about the same time. It passed through perihelion on August 5.

Mention should also be made of Delavan's Comet (1913f), which made its perihelion passage on October 26, and was under observation during the greater part of the year. In the early summer it was invisible owing to its unfavorable position, but about the end of July it again became visible, and during September and October could be seen with the naked eye.

New Observatories. The imperative need of the Canadian Dominion astronomers for a larger and more modern telescope is at last to be met by the construction of a 72-inch reflecting telescope, the Dominion government having made a grant of about $200,000 for that purpose. The large mirror, which is to have a focal length of 30 feet, will have a hole in its centre, 10 inches in diameter, so as to allow for the use of a Cassegrain combination. Placed at a distance of 23 feet from the large mirror will be a convex hyperboloidal mirror, with an aperture of 19 inches and a focal length of 10 feet, so that the resulting focal length of the instrument will be 108 feet. The mounting will resemble that of the great Melbourne reflector. The instrument will be used primarily for the spectroscopic determination of radial velocities, but will also be available for the direct photography of nebulæ, clusters, and other restricted areas of the sky. As the result of an investigation, extending over more than a year, into the suitability of a large number of sites in the Dominion, it was found that the vicinity of Vancouver, British Columbia, possessed the requisite qualifications of clear atmosphere and small nocturnal range of temperature, and accordingly the observatory in which the new instrument will be housed is to be located at an elevation of about 700 feet on Little Saanich Mountain, about seven miles north of Vancouver. The government of British Columbia has appropriated $10,000 for the purchase of the land—50 acres—and to build a road to the summit of the hill. It is expected that the telescope will be mounted and ready for use by the end of 1915.

Through the generosity of Mr. Joseph Cawthron, who has given $250,000 for the purpose, a new Solar Physics Observatory is to be established near Nelson, New Zealand.

Large Telescopes. In the *Observatory*, Hollis published a list of the large telescopes—both refracting and reflecting—having apertures of 20 inches or more, which are at present in use or under construction. Those now being constructed are as follows:

REFRACTORS

Aperture in Inches	*Observatory*
82	Nicolaieff, Russia.
26	Johannesburg, South Africa.
24	Córdoba, Argentina.
24	Santiago, Chile.
24	Detroit, Michigan.
20	Oakland, California.
REFLECTORS	
100	Mount Wilson, California.
72	Vancouver, British Columbia.
40	Simeïs, Crimea.
80	Helwan, Egypt.
80	Mr. D'Esterre's Observatory, Surrey, England.

Other Events. A Royal Medal of the Royal Society of London was awarded to Prof. Ernest W. Brown, of Yale University, for his investigations in astronomy, chiefly in lunar theory.

Books. Among the more important works on Astronomy published in 1914 may be mentioned: Moulton, *Introduction to Celestial Mechanics;* Housden, *The Riddle of Mars, the Planet;* Sampson, *The Sun;* Price, *The Essence of Astronomy;* Orr, *Dante and the Early Astronomers;* Duhem, *Le Système du Monde;* Raper, *The Practice of Navigation, and Nautical Astronomy; Tychonis Brahe Dani, Opera Omnia,* vol. i.; Eddington, *Stellar Movements and the Structure of the Universe.* See also Carnegie Institution.

ATHLETICS. See under the various sports, as Baseball, Basketball, Cycling, Billiards and Pool, Bowling, Boxing.

ATHLETICS, Track and Field. The athletic event of the year 1914 which attracted the most widespread interest was undoubtedly the four-mile intercollegiate relay race at the carnival held in Philadelphia under the auspices of the University of Pennsylvania. The contest was won by the team of Oxford University after the closest and most exciting race of its kind ever contested. The Oxford quartette consisted of A. N. S. Jackson, whose brilliant sprint on the last lap brought victory for his team; Norman S. Taber, an American Rhodes scholar from Brown University; D. M. Sproule and D. S. Gaussen. The Pennsylvania runners, who finished second, comprised Bacon, Langner, Madeira, and McCurdy. Cornell captured third place with Soudar, Potter, Irish, and Speiden.

The year also saw the rising of a new athletic star in the person of Joseph Loomis of the Chicago A. A. Loomis suddenly broke into the limelight at the national meet of the A. A. U. in Baltimore by capturing the 100-yard dash, the 220-yard hurdle race, and the running high jump. Homer Baker of the New York A. C. was another American athlete to gain fame during the year. At home he won the national half-mile championship. While abroad he carried off several titles in England, Scotland, Germany, and Denmark. His most notable performance was in the English 880-yard race where he made the fast time of 1 minute 54⅖ seconds.

Laurels in sprinting belong to Howard P. Drew of the University of Southern California. He ran 90 yards in 9⅕ seconds and 120 yards in 11⅗ seconds, both new records, and equaled the 100-yard and 220-yard world's figures of 9⅗ seconds and 21⅕ seconds, respectively. Other American sprinters to distinguish themselves were Alvah Meyer of the Irish-American A. C. of New York, A. Butler of Hutchinson High School, Kansas, and George Parker of the Olympic Club, San Francisco. Meyer and Butler equaled the 60-yard record of 6⅖ seconds and Parker equaled the furlong mark of 21⅕ seconds.

J. E. (Ted) Meredith of the University of Pennsylvania and J. Dismond of Chicago did the best work in the quarter-mile but failed to disturb the existing records. D. S. Caldwell of Cornell sprang a surprise at the intercollegiate games by equaling the record of 1 minute 53⅖ seconds for the 880 yards. In relay racing the team of the New York A. C. established a new mark of 2 minutes 6⅘ seconds for 1200 yards outdoors. The quartette consisted of F. P. McNally, D. A. Kuhn, V. Wilkie, and T. Lennon.

One of the most remarkable performances of the year was that of E. Beeson of the Olympic Club of San Francisco in the running high jump. He made a leap of 6 feet 7 5/16 inches. Of the hurdlers special mention should be made of F. W. Kelly of the University of Southern California who ran 60 yards over 3 feet 6 inch uprights in 8 seconds, 75 yards over the same obstacles in 9⅘ seconds, and 120 yards in 15 seconds. J. J. Eller of the Irish-American A. C. lowered the 75-yard low hurdle mark to 9 seconds. H. B. Liverpool, a California schoolboy, led the way in javelin throwing by hurling the shaft 184 feet 9½ inches.

In weight tossing Pat McDonald and Pat Ryan of the Irish-American A. C. and P. Donovan of the Pastime A. C. divided the honors. McDonald hurled the 18-pound shot 46 feet 2¾ inches, bettering the record by 9 inches; Ryan set the new mark of 36 feet 8½ inches for the 28-pound weight, and Donovan lifted the 56-pound shot for height to 16 feet 11 inches, excelling all previous performances. Edward Renz of the Mohawk A. C., New York, showed up the best in walking and lays claim to all the records from 12 to 25 miles. His figures, however, have not as yet been officially recognized.

The senior outdoor championships of the A. A. U. were held at Baltimore, Md., September 11–12, the Irish-American A. C. of New York winning for the fifth successive year with a total of 62 points. The New York A. C. was second with 29 points. Other teams entered and their scores were: Chicago A. A., 25; Boston A. A., 24; Illinois A. C., 16; unattached, 14; Irish-American A. A., Boston, 5; Mohawk A. C., New York, 5; Meadowbrook A. C., Philadelphia, 5; Poly Prep School, Brooklyn, 5; Kaleva A. C., Brooklyn, 5; C. Y. M. C. A., Baltimore, 3; Long Island A. C., 2; Smart Set A. C., 2; Cleveland A. C., 2; Anchor A. C., Jersey City, 2; Trinity Club, Brooklyn, 1; Swedish-American A. C., New York, 1.

In the junior outdoor championships the New York A. C. was victor, its score being 55. The Irish-American A. C. was second with 24 points and the Boston A. A. third with 20 points. The all-around championship was won by Avery Brundage of the Chicago A. A. with 6999 points. The senior indoor championships were won by the Irish-American A. C. (46) with the New York A. C. (32) second, and the Bronx Church House, New York (14) third. In the junior events the New York A. C. (25) finished first, the Irish-American A. C. (16) second, and Columbia University (15) third.

The thirty-ninth annual track and field meet of the I. C. A. A. A. was held in the Harvard Stadium, May 29–30. Cornell won the championship, scoring a total of 43 points. Pennsylvania was second with 31 and Michigan third with 29½. The standing of the other colleges was: Dartmouth 23; Yale 22; California 18; Harvard 11; Princeton 7½; Columbia 5; Penn. State 2; Brown 2; Johns Hopkins 1.

The University of Illinois for the second successive year won the annual games of the conference colleges held at Chicago, June 6, scoring 45 7/12 points. Leland Stanford Junior was second with 23⅓ points and Chicago third with 20⅓ points. Other scores were: Wisconsin 19¼; Denver 10; Colorado 7½; California 6; Perdue 5⅓; Ohio State 4⅔; Minnesota 3; Iowa 2½; Missouri 2; Drake 2; Kansas 2; Lake Forest 2; Oberlin ⅓; Nebraska ¼. The winners of other intercollegiate meets were: New England, Dartmouth; New York State, Colgate; Middle States, Lafayette; Missouri Valley, Chicago.

The most important dual college meets resulted as follows: Cornell 44, Michigan 27; Brown 65, Amherst 60; Columbia 56½, Navy 47½; Cornell 74 1/10, Michigan 41 9/10; Lafayette 56½, Lehigh 55½; Cornell 75⅖, Harvard 41⅗; Yale 87⅖, Princeton 16⅗; Illinois 76½, Wisconsin 49½; Chicago 71½, Northwestern 54½; Williams 90⅓, Amherst 35⅔; Yale 66½, Harvard 37½; Cornell 71, Pennsylvania 46; Columbia 59, Syracuse 58; Illinois 70½, Chicago 55½.

The English championships were held at Stamford Bridge, July 3–4. W. R. Applegarth for the second successive year captured the 100- and 220-yard dashes, equaling the record of 21⅕ seconds in the last named event. Homer Baker of the New York A. C., as mentioned before, won the 880 yards. W. M. Oler, Jr., of the New York A. C. captured the high jump. England, Scotland, and Ireland took part in a triangular meet at Glasgow, July 11. England won with a total of six points. Scotland was second with three points. Ireland scored one point. The Oxford-Cambridge dual meeting was won by Cambridge which tallied seven points as against Oxford's four. Jean Bouin, the French distance runner, lost his life on the battlefield shortly after the outbreak of the European war.

ATOMIC STRUCTURES. See PHYSICS.

ATOMIC WEIGHT. See CHEMISTRY.

AUCKLAND ISLANDS. A dependency of New Zealand (q.v.).

AUDACIOUS H. M. S. See NAVAL PROGRESS.

AUSTRALIA, COMMONWEALTH OF. A self-governing dominion of the United Kingdom, composed of six original States and two Territories. The temporary seat of the Federal government is Melbourne; the permanent capital will be Canberra, founded 1913, in the Federal Capital

Territory, which lies within the State of New South Wales.

Area and Population. By States and Territories are given in the table below the estimated area and the population according to the census of April 3, 1911, compared with the population as estimated Dec. 31, 1913:

	Square miles	*1911*	*1913*
New South Wales	309,460	1,646,734	1,881,716
Victoria	87,884	1,315,551	1,412,119
Queensland	670,500	605,813	660,158
South Australia	380,070	408,558	440,047
Western Australia	975,920	282,114	320,649
Tasmania	26,215	191,211	201,675
Northern Territory	523,620	3,310	3,672
Federal Capital Ter.	912	1,714	1,988
Commonwealth	2,974,581	4,455,005	4,872,023

The population is exclusive of full-blooded aborigines, whose numbers are estimated not to exceed 100,000, many of whom live in the unexplored interior. Full-blooded aborigines in the employ or within the settlements of whites were enumerated in 1911 and numbered 19,939. The average density of the population for the commonwealth in 1911 was 150 per 100 square miles; the greatest density being 1497 per 100 square miles in Victoria, and the least density being 29 per 100 square miles in Western Australia (excepting the Northern Territory, which had 0.6). The population having Australia for birthplace in 1911 numbered 3,667,672, New Zealand 31,868, the United Kingdom 590,722, other European countries 73,949, Asia 36,442, Africa 4958, America 11,278, Polynesia 3410, at sea 4238, unspecified 30,468. Chinese numbered 25,772 and Japanese 3576. Of the total population in 1911, males numbered 2,313,035 and females 2,141,970.

According to religions, the population was divided in 1911 as follows: 1,710,443 Church of England, 558,336 Presbyterians, 547,806 Methodists, 458,379 other Protestants, 921,425 Roman Catholics, 17,287 Jews. According to occupation, the population was divided as follows: 144,611 professional, 201,366 domestic, 286,687 commercial, 157,391 in transport and communications, 562,337 industrial, 586,148 primary producers, 23,055 of independent means, 2,449,986 dependent (2,441,047 dependent on natural guardians), 8587 supported by voluntary and State contributions, and 353 criminals under legal detention, and 43,424 unspecified.

The total increase of population in the commonwealth between the census of March 21, 1901, and that of April 3, 1911, was 681,204, of which 335,107 were males and 346,097 females; as compared with a total increase of 599,409 (273,889 males and 325,520 females) for the period from 1891 to 1901. The total marriages for the commonwealth in 1913 numbered 41,594, births 135,714, deaths 51,789. The total increase of population for the year was 277,620 (135,714 births, and 141,906 oversea arrivals); the total decrease was 138,920 (51,789 deaths, and 87,131 oversea departures).

The total metropolitan population in 1911 was 1,694,329, or 38.05 per cent of the total population. A feature of the distribution of population in Australia is the excessive tendency to accumulate in towns, especially the capital cities. The capital of New South Wales is Sydney, with a population in 1911 with suburbs (approximately the area within a 10-mile radius) of 629,503; capital of Victoria, Melbourne, with 588,971; of South Australia, Adelaide, with 189,646; of Queensland, Brisbane, with 139,480; of Tasmania, Hobart, with 39,937; of the Northern Territory, Darwin, with 958; of the Federal District, Canberra. Figures for the population of Australian towns and cities are confusing, because they often relate to different areas. A population figure may include the inhabitants of the town proper and of its suburbs, persons living within a 10-mile or sometimes a 5-mile radius; it may relate to the "locality," in which case no clearly defined boundaries exist, and the population given represents the number of persons who returned themselves as belonging to that locality; again, it may relate to the "local government area," or the district incorporated for municipal purposes and variously known in the several States as city, town, borough, municipality, and corporation. Thus, according to the census of 1911, the population of Sydney with suburbs was 629,503; the "locality" Sydney, 107,133; "the local government area" (city) Sydney, 112,021. The following figures show for other large places the 1911 population by locality and local government area respectively: Melbourne, Vict., 36,293 and 103,593; Melbourne, East, Vict., 46,016 and 46,190; Ballarat, Vict., 38,686 and 22,017; Richmond, Vict., 38,559 and 40,442; Fitzroy, Vict., 34,141 and 34,283; Sydney North, N. S. W., 32,764 and 34,646; Adelaide, S. A., 32,981 and 42,294; Brunswick, Vict., 32,201 and 32,215; Balmain, N. S. W., 31,961 and 32,038; Perth, W. A., 31,300 and 35,767; Broken Hill, N. S. W., 30,953 and 30,072; Hobart, Tas., 27,993 and 27,526; Carlton, Vict., 27,476, not a local government area; Newtown, N. S. W., 26,427 and 26,498; Marrickville, N. S. W., 25,993 and 30,653; Prahran, Vict., 25,489 and 45,367; St. Kilda, Vict., 25,449 and 25,334; Redfern, N. S. W., 24,275 and 24,427; Hawthorne, Vict., 24,353 and 24,450; Paddington, N. S. W., 24,150 and 24,317; Leichhardt, N. S. W., 24,137 and 24,254; Footscray, Vict., 21,933 and 24,254; Geelong, Vict., 21,630 and 13,618; Glebe, N. S. W., 21,444 and 21,943; Brisbane South, 21,332 and 34,478; Launceston, Tas., 20,937 and 20,754; Petersham, N. S. W., 20,407 and 21,712; Collingwood, Vict., 20,254 and 34,190; Waverly, N. S. W., 18,961 and 19,831; Bendigo, Vict., 17,883 and 28,539; Melbourne North, Vict., 17,750, not a local government area; Brisbane, Qld., 17,715 and 35,491.

The commonwealth acquired jurisdiction over the Northern Territory, Jan. 1, 1911, over Papua (q.v.) in 1905. The Federal Capital Territory (including a small area at Jervis Bay) was taken over by the commonwealth from New South Wales Jan. 1, 1911. In 1913 the survey and other operations, including roads and engineering work for the new capital, Canberra, were in progress.

Education. The number of children over 6 and under 13 years of age receiving primary instruction in State schools was reported at 496,163, of whom 257,609 were boys and 238,554 girls; at private schools, 106,663, of whom 48,583 boys and 58,080 girls; at home, 17,151, of whom 7720 boys and 9431 girls. In addition there were 15,708 recorded as receiving instruction in schools whose class was not stated and 64,426 as receiving no stated instruction. Public instruction is under the control of each State, and is detailed as follows:

New South Wales. Education is nonsectarian, compulsory, and free, school fees in State, primary, and superior schools having been abolished in October, 1906. The total enrollment in 1913 in 3547 State schools was 269,937, and the average daily attendance 178,027. State expenditure on education, science, and art, £1,875,998. The University of Sydney, with which four colleges, including the Women's College, are affiliated, was incorporated in 1851. In addition to the State schools, there were 733 private colleges and schools in 1913, with 64,591 scholars; and 32 other schools, with 1942. In addition, there are special and technical institutions.

Victoria. Primary instruction is compulsory, secular, and free between the ages of 6 and 14. In 1913 there were enrolled 241,042 pupils, with an average daily attendance of about 63 per cent. Secondary education is largely under private control in 519 schools with 49,549 pupils. There is a State-aided university at Melbourne, with three affiliated colleges, and a school of mines at Ballarat.

South Australia. Primary education is compulsory, secular, and free, being provided by the State under control of a responsible minister. State schools numbered 815 in 1913, with 58,658 pupils. State expenditure, £237,629. There were 168 private schools, with 11,012 pupils. Secondary education is under private control. There is a university at Adelaide.

Queensland. Primary education is compulsory, secular, and free. There were 1359 State schools and 6 high schools in 1913, with a total daily attendance of 79,955; and 153 private and grammar schools, with an average attendance of 15,518. A State-aided university was established in 1910.

Tasmania. Primary instruction is compulsory, secular, and free. State schools, 1913, 431, with an enrollment of 33,953. Secondary education is provided for in State and private establishments. There is a university at Hobart.

Western Australia. Primary instruction is compulsory and free, the elementary schools being under the control of the minister of education. State schools in 1912 numbered 549, with an enrollment of 38,667 and an average daily attendance of 32,959; private schools, 118, with 9756 and 8506.

Private schools include the schools not entirely under State control; hence the term "private," though popularly applied is in some degree a misnomer. The 1911 census returned only 2¼ per cent of the population 20 years of age and over as unable to read.

PRODUCTION AND INDUSTRY. The estimated values of the products of the commonwealth are given in the table below for comparative years:

	1910	*1911*	*1912*
Agricultural ...	£39,752,000	£38,774,000	£45,754,000
Pastoral	56,993,000	50,725,000	51,615,000
Dairying, etc....	17,387,000	19,107,000	20,280,000
Forests and Fisheries	4,789,000	5,728,000	6,482,000
Mining	23,215,000	23,480,000	25,629,000
Manufactures ..	45,598,000	50,767,000	57,022,000

Agriculture. The total land area of the commonwealth is estimated at 1,903,731,840 acres, of which 17,368,000 were under cultivation in 1912–13, compared with 16,642,000 in 1911–12. The following table shows area under main crops for two years (figures for corn are in each case for the preceding year) with yield in bushels of wheat, oats, and corn, and in tons of hay and sugar cane:

	Acres		*Yield*	
	1912-13	*1912-13*	*1913-14*	*1913-14*
Wheat ..	7,840,000	9,295,256	91,981,000	103,517,725
Oats	874,000	859,545	16,116,000	15,288,932
Corn	315,000	336,975	8,356,000	9,077,662
Hay	3,217,000	2,756,105	3,955,000	3,374,052
S. cane..	155,000	160,976	1,135,000	2,271,558

In New South Wales, 4,568,818 acres were under cultivation and produced for the year ending March 1, 1913, 28,020,381 bushels of wheat, 4,359,000 bushels of corn, 1,835,406 of oats, 185,970 tons of sugar cane, 95,706 tons of potatoes, 18,117 cwt. of tobacco, and 1,154,000 bushels of citrous fruits. Land alienated and in process of alienation June 30, 1913, 57,107,976 acres; land leased for pastoral occupation and homestead, mining, and other purposes, 124,354,945 acres.

In Victoria, 6,129,893 acres were under cultivation in 1913–14, of which 2,565,961 were under wheat, 442,060 under oats, and 977,684 under grasses. The area returned under cultivation in 1912–13 was 5,707,000 acres, of which 2,085,000 were devoted to wheat, producing 26,223,000 bushels; oats, 439,000 acres and 8,324,000 bushels; barley, 72,000 acres and 1,745,000 bushels; potatoes, 48,000 acres and 191,000 tons; hay, 1,204,000 acres and 1,573,000 tons.

In South Australia, about two-thirds of the total area is farm and grazing lands. In 1913–14, 4,769,500 acres were under cultivation, of which 2,267,851 acres were under wheat, producing 16,938,988 bushels; 568,550 acres under grasses, 116,732 under oats, 90,552 under barley, 10,809 under potatoes; fallow, 1,569,623 acres.

In Queensland the government has parted with the fee simple of 16,041,764 acres; under a system of deferred payment, 10,039,255 acres additional are in process of alienation; 228,873,480 acres have been leased for sheep and cattle runs, 52,251,784 for grazing farms and homesteads; 40,535,160 acres are held under occupation license, 310,966 under gold mining and mineral lease, 107,707 for special purposes, and 42,363 acres for special lease. Wheat was grown on 42,962 acres in 1911–12, yielding 285,109 bushels; corn on 153,916 acres, yielding 3,637,562 bushels; oats on 557 acres yielding 5783 bushels.

In Tasmania March 1, 1913, 264,100 acres were under crops and 1,621,096 under sown grasses; under wheat, 18,432 acres. Leased for pastoral purposes from the crown, 1,621,096 acres. Wheat was grown in 1911–12 on 37,208 acres, yielding 659,615 bushels; oats, 57,583 acres and 1,504,633 bushels.

In Western Australia 1,547,800 acres were under crops in 1913–14, of which 1,104,753 acres were under wheat. In 1911–12, 612,104 acres were under wheat, yielding 4,358,904 bushels; oats, 77,488 acres and 961,385 bushels.

Live Stock. The number of animals in the country for comparative years is shown in the table below:

	1911	*1912*	*1913*
Sheep	93,003,300	84,000,000	85,046,724
Cattle	11,828,000	11,658,000	11,498,167
Horses	2,279,000	2,899,000	2,522,178
Swine	1,110,000	844,000	800,367

In 1913 the commonwealth produced 648,852,000 pounds of wool, stated as in the grease, against 726,409,000 pounds in 1912, and 721,298,000 pounds in 1911. Output of butter 1913, 198,648,000 pounds, against 211,574,000 pounds in 1912; cheese, 19,360,000 pounds, against 16,147,000; bacon and hams, 52,179,000 pounds, against 54,370,000.

In New South Wales sheep are raised in great numbers. There were, Dec. 31, 1913, in the State, 39,851,723 sheep, 746,075 horses, 822,667 dairy cows, 2,000,073 other cattle, and 288,090 swine. The production of wool, stated as in the grease, in 1912, was 326,804,000 pounds, valued at £12,823,000. Butter production in 1913, 77,687,241 pounds; cheese 6,479,496 pounds; bacon and hams 15,192,263 pounds.

Victoria contained, 1913, 656,090 milch cows with a total production for the year of 73,381,567 pounds of butter and 4,856,321 pounds of cheese; other cattle, 872,473; sheep, 12,113,682; swine, 221,277; horses, 562,331.

South Australia had, 1913, 5,073,057 sheep, 352,905 cattle, 283,641 horses, 64,119 swine, and 9,534 goats. Wool produced for export in 1913, 48,035,906 pounds, valued at £1,809,517.

Queensland possessed, in 1913, 5,322,033 cattle, 21,786,600 sheep, 707,265 horses, and 140,045 swine.

Tasmania had, 1913, 1,745,356 sheep, 205,743 cattle, 37,990 swine, and 43,941 horses. The 1913 wool clip was estimated at 8,871,669 pounds.

The live stock in Western Australia included 4,418,402 sheep, 829,489 cattle, 155,831 horses, 47,756 swine, 27,431 goats.

Minerals. The value of the gold output for the commonwealth in 1913 was £9,376,573—£635,703 from New South Wales. The output of gold from Western Australia in 1912 was valued at £5,448,385; from Victoria, £2,039,464; Queensland, £1,477,979; New South Wales, £702,129; Tasmania, £161,300; South Australia, £28,000; Northern Territory, £22,671. Output of silver from Tasmania, £309,098; New South Wales, £251,652; Western Australia, £16,353 (domestic export); Queensland, £66,188; Victoria, £2200; South Australia, £326. Coal output from New South Wales, £3,660,015; Queensland, £328,264; Victoria, £259,321; Western Australia, £135,857; Tasmania, £24,568. Output of copper from Queensland, £1,698,280; New South Wales, £579,791; South Australia, £461,500; Tasmania, £440,444; Western Australia, £60,537; Northern Territory, £3998; Victoria, £2088 (1911). Zinc from New South Wales was valued for 1911 at £1,414,980; tin, £307,089; the record year for Australian gold production was 1903, with a total value of £16,294,684.

Manufactures. There were in the commonwealth in 1913, 15,550 industrial establishments, employing 337,162 work people and paying wages amounting to £33,585,000; value of plant and machinery, £35,919,000; value of raw materials employed, £96,409,000; value added by manufacture, £65,197,000. Total value of ultimate output for the year, £161,606,000. Of the total number of establishments, 14,455 in the commonwealth in 1911, 5039 were in New South Wales, employing 108,664 work people, with output valued at £54,340,011; 5116 in Victoria, with 111,948, £41,747,863; 1657 in Queensland, with 37,156 and £16,675,662; 1314 in South Australia, with 27,907 and £12,580,851; 710 in Western Australia, with 15,799 and £5,311,086; 609 in Tasmania, with 10,289 and £3,525,087. Value of aggregate output, £133,186,560.

COMMERCE. In the table below are shown imports of merchandise, of coin and bullion, and total imports, exports of domestic produce, reexports, and total exports, for three successive years:

	1910	*1911*	*1912*
Imps. mdse.....	£58,682,891	£64,997,907	£76,483,360
Imps. C. & B....	1,331,960	1,969,581	1,675,240
Total	£60,014,851	£66,967,488	£78,158,600
Exps. dom.*....	71,836,195	76,205,210	75,961,563
Re-exports*	2,654,955	3,277,048	3,184,527
Total	£74,491,150	£79,482,258	£79,096,090

* Including bullion and specie.

The totals for 1913 were £79,749,653 imports and £78,523,769 exports.

In the following table are shown total imports and total exports for 1912 and 1913. The value of goods transferred from one State to another for transhipment overseas is included in the exports of the State from which the goods are finally dispatched.

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
	£	£	£	£
N. S. W.	32,808,124	32,850,663	32,958,529	32,889,789
Vict.	25,081,074	24,387,078	19,118,121	17,837,591
Qld.	7,456,917	6,714,942	9,209,454	12,852,748
S. A.	6,972,765	7,348,203	9,615,279	9,809,763
W. A.	5,317,892	5,407,714	7,640,707	5,102,240
Tas.	1,009,198	1,025,081	499,894	513,727
N. T.	18,130	20,977	59,106	67,911

In the table below the imports and exports in the 1912 and 1913 trade are detailed in pounds sterling.

Imports	*1912*	*1913*
Apparel and textiles.......	£18,155,000	£18,385,000
Metals and machinery	18,309,000	19,470,000
Drugs, chemicals, etc.	2,394,000	2,498,000
Timber	2,858,000	3,574,000
Paper and stationery	3,116,000	3,135,000
Bags and sacks	1,009,000	2,092,000
Oils (in bulk)	2,023,000	1,970,000
Sugar	1,191,000	929,000
Tea	1,324,000	1,811,000
Spirits	1,244,000	2,096,000
Arms, ammunition, etc.....	952,000	842,000
Tobacco	1,046,000	1,115,000
Exports		
Wool	£26,855,000	£26,277,000
Wheat	6,403,000	7,987,000
Skins and hides	4,290,000	5,546,000
Butter	3,343,000	3,181,000
Copper matte, ingots, and ore	3,311,000	2,972,000
Zinc concentrates	1,970,000	1,850,000
Tallow	1,550,000	2,163,000
Mutton and lamb	1,592,000	2,897,000
Flour	1,457,000	1,864,000
Timber	890,000	965,000
Coal	1,147,000	1,222,000
Lead (pig and matte)	1,618,000	1,848,000
Beef	1,631,000	2,652,000
Tin (ingots)	791,000	690,000

The direct export of wool, the produce of the State from New South Wales in 1912, was 271,871,731 pounds, valued at £11,496,850; other exports from this State were gold bullion and coin, £3,044,157; silver lead bullion, £482,489; coal and coke, £1,153,943; horses, £53,002; sheep, £18,018; cattle, £6516; hides and skins, £1,907,231; meats, £1,327,342; tallow, £668,036; leather, £345,919; butter, £1,076,851; wheat,

£1,619,107; copper, £2,310,322; tin, £646,225, etc.

The export overseas of domestic produce from Queensland were wool, valued at £4,275,520; gold, £74,538; tin, £141,957; live stock, £51,995; meats (exclusive of pork and pork products but including extracts), £2,033,001; hides and skins, £478,137; tallow, £466,916; copper, £577,241, etc.

From South Australia the wool export was valued at £2,032,383; bread stuffs, £3,245,199; meats, £197,601; fruits and wine, £134,662; hides and skins, £432,052; bullion and specie, £586,070, etc.

From Victoria wool and gold constitute nearly half of the total export. The export of wool in 1912 was 166,859,531 pounds, valued at £6,990,918.

From Western Australia the wool export in 1912, principally to London, was 27,901,770 pounds greasy, valued at £1,026,041, and 225,330 pounds scoured and washed, £9625. Export of wheat, £100,148; flour, £121,730; timber, £903,396; pearls and shells, £521,609; copper ingots and ore, £60,617; tin ingots and ore, £79,738; silver, £19,725, etc.

Cattle exported from the Northern Territory in 1910 were valued at £161,605; tin ore, £34,308; gold, £33,672; horses, £14,070; pearl shells, £10,030.

By principal countries of origin and destination the trade is detailed below in thousands of pounds sterling:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United Kingdom..	45,925	47,615	81,459	84,805
Germany	5,145	4,956	7,441	6,878
United States ...	9,450	9,522	2,048	2,681
Belgium	2,146	2,258	6,585	7,465
France	574	625	8,022	9,684
New Zealand....	8,852	2,518	2,229	2,856
India	2,106	2,964	2,915	1,855
Ceylon	864	968	7,589	1,128
Japan	950	918	1,169	1,429
South Africa	295	127	1,488	1,941

Total shipping entered and cleared in the oversea trade for 1912, 4061 vessels, of 10,310,779 tons, compared with 4174 vessels, of 9,984,801 tons in 1911.

COMMUNICATIONS. Government railways in operation June 30, 1913, are shown in the table below: the first column relating to mileage, the second to cost of construction and equipment to end of June, 1912, the third to gross receipts, and the fourth to working expenses for the year ending June 30, 1913:

	Miles	*Const.*	*Rev.*	*Expend.*
N. S. W.	8,920	£58,514,908	£6,748,985	£4,644,881
Vict. ..	8,647	45,836,578	5,205,442	8,589,198
Qld. ...	4,524	27,751,227	8,821,672	2,150,991
S. A. ..	2,168	14,927,649	2,298,305	1,471,701
W. A...	2,854	18,288,098	2,037,858	1,506,600
Tas. ...	509	4,258,018	827,118	217,857
N. T. .	145	1,040,702	15,988	16,666
Total	17,777	160,557,160	19,955,308	18,597,889

In addition there were 1960 miles of private railways. In 1912 the building of the trans-Australian railway was begun; it is to have a total length of 1060 miles.

The Australian Railway War Council, provided for by Section 64 of the Australian local defense act of 1903, which was organized for the first time in February, 1911, was in session during the year 1914. It was reported that the Council, which included the commissioners of all the State railways and the chief of the general staff, was discussing the uniform gauge question and the construction of new railways, which were strategically necessary. One such project was a strategic line between Adelaide and Brisbane which would reduce the railroad distance between the cities by one-half; the present route being via Melbourne and Sydney. The results were to be placed before a conference of the Federal and State commissioners at an early date.

On June 30, 1914 at the end of the fiscal year the Commissioner of Railways reported that there was an aggregate of 4700 miles of which 189 miles were opened to traffic during the year. At this time railway lines amounting to nearly 300 miles were under construction, and over 1400 miles had been authorized by Parliament, but had not yet been begun.

In November, 1914, it was reported that 231 miles of earthwork had been completed on the East to West Trans-continental Railway, which the Australian government is building between Port Augusta in South Australia and Kalgoortie in Western Australia. Tracks on these railways had been laid for 225 miles.

FINANCE. Revenue and expenditure of the commonwealth for four successive years are shown in the table below, together with the balance repayable to the State:

	Rev.	*Expend.*	*Bal. rep.*
1909-10	£15,540,669	£ 7,499,516	£8,041,158
1910-11	18,806,287	18,158,529	5,647,708
1911-12	20,548,520	14,724,097	5,824,428
1912-13	21,899,418	15,779,488	6,119,980

As estimated for 1913–14, the main sources of revenue and the principal items of expenditure were as follows:

Revenue	£	*Expend.*	£
Customs *	14,900,000	Repayments ..	6,815,000
Posts	4,548,000	Pensions	2,620,000
Land tax	1,400,000	Defense	8,085,870
Defense	85,000	Posts	5,189,265
Miscellaneous .	579,000	Miscellaneous .	4,302,865
Total	21,462,000	Total	21,462,000

* Including excise.

Revenue from customs and excise is collected by the commonwealth and partly repaid to the States at the rate of 25s. per head of the population.

The commonwealth has undertaken responsibility for the debts of the Northern Territory and the Port Augusta-Oodnadatta Railway, whose combined total is £5,671,847. The other State debts remain at the charge of the State governments. The total of these several debts amounted June 30, 1913, to £294,472,486.

Revenue, expenditure, and debt outstanding for the several States are shown in the table below for 1913–14:

	Rev.	*Expend.*	*Debt.*
N. S. W. ..	£18,298,591	£17,177,769	£106,170,747*
S. Australia.	4,822,766	4,604,129	88,564,832
Queensland..	6,973,259	6,962,516	52,164,086
Victoria† ..	10,287,285	10,258,081	62,776,724
Tasmania ..	1,238,085	1,162,514	12,265,012
W. Australia	5,205,848	5,840,754	84,420,181

* Debt 1912-13. † Revenue, expenditure and debt, 1912-13.

The aggregate sinking funds against total State debt in 1912 amounted to £5,701,767, so that the net debt in 1912 was £271,422,328, or £58, 10s. 3d. per capita. Of the total debt, 69.39 per cent was floated in London, and 30.65 per cent in Australia.

NAVY. The headquarters of the British fleet in Australia is at Sydney, a first-class naval station. In 1902 the agreement entered into by the commonwealth and imperial governments provided for a naval force to be maintained from 1903 until 1913 in Australasian waters by the British Board of Admiralty, in return for annual contributions from Australia of £200,000 and from New Zealand (a third party to the agreement) of £40,000. Out of this agreement has grown the "Australian defense scheme," whereby the commonwealth provides and maintains certain ships of war to form an Australian squadron of the royal navy, under command of a commonwealth officer in time of peace; in time of war it was to form an integral part of the eastern fleet.

The programme of naval construction adopted in 1911 by the commonwealth government covered a period of 22 years, and provided for a fleet of 8 battle cruisers, 10 protected cruisers, 18 destroyers, 12 submarines, and other craft. Serving in the royal navy at the end of 1913 were 1 battle cruiser—the *Australia*—4 protected cruisers, 3 destroyers, 2 torpedo boats, 2 gunboats, and 2 training ships. The *Australia* was launched at Clydebank, Oct. 25, 1911, and commissioned June 21, 1913; she has a displacement of 19,200 tons, and her main armament includes 8 12-inch guns and 16 4-inch guns; her indicated horsepower is 44,000 and her speed 28 knots. The light cruiser *Sydney*, built at Glasgow and commissioned in 1913, the *Brisbane*, completed 1914 at the navy yard at Sydney, and the *Melbourne*, launched at Glasgow, 1912, all have a displacement of 5400 tons, a main armament of 8 6-inch guns, 22,000 indicated horsepower, and a speed of 24½ knots. Under construction for the Australian navy at the navy yard of Sydney in 1914 were the destroyers *Swan*, *Derwent*, and *Torrens*, besides two submarines at the Vickers yard, Barrow.

GOVERNMENT. The government is that of a Federal commonwealth within the British Empire, the executive authority resting in the sovereign acting through a governor-general appointed by the sovereign. The governor-general is aided by a Federal executive council of seven ministers and certain honorary ministers. The Federal government possesses under the constitution limited and enumerated powers as surrendered by the federating States, including authority over commerce and navigation, finance, defense, posts and telegraphs, census and statistics, and conciliation and arbitration in extra-State industrial disputes, as well as power to assume control of railways and lighthouses, marriage and divorce, emigration and immigration, currency and banking, and weights and measures. The legislative authority is exercised by a Federal Parliament composed of a Senate of 36 members (six from each of the original States elected for six years by universal suffrage), and a House of Representatives similarly elected for a maximum of three years with members proportionate to the population with a minimum of five Representatives for each State. For the period 1913–16, the House was composed of 27 members for New South Wales, 21 for Victoria, 10 for Queensland, 7 for South Australia, 5 for Tasmania, and 5 for Western Australia. Each State is administered by a governor, appointed by the crown and aided by a responsible council of ministers; and has a bicameral Parliament elected by universal adult suffrage. The Governor-General at the close of 1914 was the Rt. Hon. Ronald Cranfurd Munro-Ferguson, who succeeded Lord Denman in May, 1914. The Liberal ministry formed June 24, 1913, continued in power until September 18, 1914. It was constituted as follows: Prime Minister and Minister for Home Affairs, Joseph Cook; Treasurer, Sir. J. Forrest; Attorney-General, W. H. Irvine; Minister for External Affairs, P. M. Glynn; Minister for Trade and Customs, L. E. Groom; Postmaster-General, A. Wynne; Vice-President of the Executive Council, J. H. McColl; Ministers without portfolio, W. H. Kelley and J. S. Clemons; Liberal leader in the Senate, E. D. Millen. The constitution of the new ministry is given below, under HISTORY, *The New Cabinet*.

HISTORY

THE DEADLOCK IN PARLIAMENT. One of the most remarkable passages in the history of parliamentary government was afforded by the attempt of Mr. Joseph Hume Cook to govern the Commonwealth of Australia with a majority of one in the lower house and a hostile majority in the Senate. Mr. Cook, as reference to the NEW INTERNATIONAL YEAR BOOK for 1913 will show, became Commonwealth premier on June 24, 1913, following a general election in which his party, the Liberal party, won a majority of one vote in the Commonwealth House of Commons; but the Labor party was so strongly preponderant in the Senate that Mr. Cook's Liberal government found itself in a very precarious position. The elaborate Liberal programme, outlined in the last NEW INTERNATIONAL YEAR BOOK, could hardly be imposed upon an unfriendly Senate while the House offered such slender support to the ministry; the defection of a single member in the House would overthrow the cabinet. Mr. Cook himself recognized that sooner or later a deadlock between the two houses of Parliament would have to be faced, and the sooner the better. He therefore made little or no attempt to carry out the capital measures of his programme. Two things, however, he did accomplish. In the first place, he came to an agreement with the State Governments of New South Wales, Victoria, and South Australia for the joint prosecution of an important irrigation project, namely, the construction of a vast storage dam at Cumberoona on the Upper Murray River, at the approximate cost of $23,000,000. In the second place, after consultation with the various State Governments, he arrived at a solution of the banking problem, looking toward the removal of the present unfortunate competition between the banking enterprises of the individual States and the savings-bank branches of the Commonwealth Bank; according to his plan, which was submitted for the ratification of Parliament, the Commonwealth government was to surrender its savings-bank business immediately, while in return the States were gradually to turn over to the Commonwealth all of their other banking interests.

Perhaps a third act of Mr. Cook's government might also be mentioned, and that is his appointment of Federal commissioners to investigate the question of electoral reform and to examine the evidence of corrupt practices in the election of 1913. It seemed that the electoral rolls were in a lamentable state of confusion, carrying the names of thousands of ineligibles, making possible a considerable amount of illegal plural voting, and even retaining the names of two thousand dead voters.

These measures attracted little attention, however, while public opinion was chiefly concerned with the perplexing problem of the Parliamentary deadlock. Would Mr. Cook simply call for new elections to the House of Commons, thus giving the Laborites an opportunity—if they could but gain one more seat—to overthrow his ministry? Would he engage in a protracted and painful struggle with the Opposition and endeavor to accomplish the impossible task of governing with a majority in only one house? Or would he deliberately bring about a deadlock between the House and the Senate, upon some particular issue, in order to avail himself of the clause in the constitution which provides that in case the Senate twice rejects a measure passed twice by the House—in an interval of not less than three months—both houses of Parliament may be dissolved and elections instituted by the Governor-General? That the Premier would follow this last-mentioned course, with the hope of securing the election of Liberal majorities in both Senate and House, could hardly be doubted after December, 1913, when two Bills passed by the House were rejected by the Senate. One was a Bill to prohibit the showing of preference to trade-unionists in appointments to the civil service; the other was a Bill to restore postal voting. When Parliament was convened for the spring session, on April 15, 1914, the Speech from the Throne indicated that these two measures would again be brought before the House, and made it clear that the government was bent on bringing the issue to a head. In the House, however, the Labor Opposition was determined to thwart Mr. Cook's plans and to obstruct his action in every way. A vote of no confidence, proposed by the Laborites, was so acrimoniously debated that not until May 6 was it finally defeated, and then only by the Speaker's casting his decisive vote in support of the ministry. By their obstructionist tactics the members of the Opposition goaded the government to desperation. Finally the whip of the Liberal party decided upon the desperate expedient of holding an unexpected all-night session to wear the Opposition out; upon the appointed night pillows and blankets were supplied to the ministerialists in the House of Commons and the deliberations were prolonged throughout the night. The Laborites, caught unprepared, and finding their seats both hard and chilly, attempted to purloin the pillows from sleepy Liberals. In this fashion a battle was provoked which resembled a schoolboy pillow-fight far more than a legislative deliberation. But at any rate the government won its point, for in the early morning, while two exhausted Laborites were absent, the Liberals were able to move the closure and secure the passage of the Government Preference Prohibition Bill. Perhaps the Labor leaders who so strenuously had striven to delay this Bill in the House expected that their fellow-Laborites in the Senate would pursue the same policy of obstruction; if so, they were disappointed. For the Labor majority in the Senate immediately rejected the Bill, May 28. Thus the Preference Prohibition Bill, designed simply to purify the civil service, assumed capital importance as a test measure: the House had passed it twice and the Senate had twice rejected it. On this ground Mr. Cook was able to inform the Governor-General that a deadlock existed between the two houses of Parliament, and to request a double dissolution, under section 57 of the Constitution. Governor-General Munro-Ferguson immediately complied with the Premier's request, and it was announced that Parliament would be dissolved on July 20 in preparation for general elections to take place on September 5. The call for new elections was hailed by the Liberals with jubilation, since it offered them an opportunity to win majorities in both houses of Parliament. But the Opposition, and especially the Labor Senators, gave evidence of more than a little irritation, and prepared two addresses to the Crown (i.e. to the Governor-General). The first address called for the publication of the correspondence which had passed between the Governor and his ministers relative to the dissolution; in effect such a demand was tantamount to censuring the Governor for granting the dissolution. Although under a plain interpretation of the Constitution the action of Munro-Ferguson would appear to have been perfectly legitimate, his Laborite critics pointed to the precedent set by former Governors-General in refusing to dissolve the Parliament when requested so to do by Sir George Reid in 1905 and by Mr. Fisher in 1909. The second address of the Senate Laborites asked the Governor-General to submit again in the coming elections the six referenda which were discussed in the last NEW INTERNATIONAL YEAR BOOK and which were defeated by narrow margins when voted upon in the elections of May, 1913. Both addresses were denied; the correspondence was not published, nor were the referenda submitted to the people. Temporary supplies were granted and then Parliament was dissolved.

THE SEPTEMBER ELECTIONS. Both parties entered the electoral campaign with unusual enthusiasm and confident expectation of victory. Mr. Cook, for the Liberals, in a series of vigorous speeches, declared that the chief issue of the contest was the valiant fight of his party against the determination of tyrannous labor organizations to dominate Parliament; he denounced those legislators who would allow their action to be dictated by trade union councils, and pleaded for the independence of the nation's representatives. The minor planks in the Liberal or ministerial platform were: (1) an electoral reform which would establish the principle of proportional representation for the Senate and preferential voting for the House; (2) a scheme of national insurance; (3) the maintenance of a "White Australia" by the exclusion of colored immigrants; (4) the development of the local navy; (5) the erection of an Interstate Wages Board. On the other hand Mr. Fisher, speaking for Labor, (1) attacked the Government's policy of borrowing money for expenditure on defense; (2) demanded wider Federal powers for dealing with industrial unrest, trusts, and the high cost of living; (3) promised a State-owned steamship line and Atlantic cable; (4) called for higher duties; (5) proposed the Swiss initiative-referendum system as a substitute for double dissolution in case of Parliamentary deadlocks; (6) recommended the creation of a Commonwealth Government Insurance Department; (7) pledged his party to provide for widows and orphans; (8) and declared war on cancer, consumption, and the red plague. In the midst of the campaign all Australia was suddenly plunged into a turmoil of excitement by the outbreak of the great war in Europe; and one might well have expected political feuds to be forgotten and the electoral campaign to be deprived of all interest by the war. Quite the reverse actually happened. In the elections of September 5 the polling was unusually heavy—in Victoria, for instance, fully 80 per cent of the qualified electors voted. The result was a sweeping victory for Labor, a triumph so complete that the Liberal minority in the Senate was almost wiped out and in the House the acquisition of nine new seats gave Labor a working majority. It meant a vindication of the right of labor organizations to interfere in politics, it indicated the continuance of social legislation, and it signified that, in all probability, the oft rejected six referenda would soon be passed, at last giving the Commonwealth Government the right to intervene effectively for the regulation of "big business" and for the protection of the laboring classes. No significance attaches, however, to the Labor victory in the matter of loyalty to the Empire, for as we shall presently see, the Labor leader was not a whit less loyal than Mr. Cook.

THE NEW CABINET. Bowing to defeat, Mr. Cook almost immediately handed in the resignations of his Liberal ministry, and the triumphant Laborites, now controlling ample majorities in both houses of Parliament, had the satisfaction of seeing their leader, Mr. Andrew Fisher, form a Labor ministry. As announced on September 18, the new Labor cabinet was constituted as follows: Prime Minister and Treasurer, Andrew Fisher (who had previously occupied the same office from April 29, 1910 to June, 1913); Attorney-General, W. M. Hughes; Defense, G. F. Pearce; Trade, Frank G. Tudor; External Affairs, John A. Arthur; Postmaster-General, William S. Spence (president of the Australian Workers' Union); Vice-President, Executive Council, A. Gardiner; Home Affairs, William O. Archibald (former leader of the South Australia Labor party); Honorary Ministers, Hugh Mahon, E. J. Russell, J. Jensen. The first four mentioned were members of the former Labor ministry which held office from 1910 to 1913.

In the extraordinary situation created by the war, the new government was not likely immediately to insist upon carrying its full programme into effect. For the time being the Government was expected simply to cope with the war situation. Consequently Mr. Fisher simply continued Mr. Cook's work of drilling troops for the war and of relieving misery and unemployment by pushing forward railway construction and other public works. His motto was "standing with the Empire to the last man and with the last penny."

AUSTRALIA AND IMPERIAL DEFENSE. That Australia was able to assist at all in the great war was due to the fact that for the past three or four years she had been preparing to bear a worthy part, both by land and by sea, in case the Empire should be involved in a serious struggle. Universal military training, as provided by the defense act of 1910, had imparted some slight acquaintance with military methods to some 22,000 militiamen, in addition to 90,000 cadets then undergoing compulsory training, and about 55,000 skilled marksmen registered with rifle clubs. This enthusiastic enterprise was highly commended by General Sir Ian Hamilton, Inspector-General of the Overseas Forces, when in February and March of 1914 he reviewed the various divisions of Australia's citizen-soldiery; but along with his hearty commendation of what the Commonwealth had already achieved, Sir Ian delivered a vigorous exhortation to increased energy in the future. Australia, he said, was surrounded by a "ring of armed nations," some of whom were "looking in a formidable manner at Australia"; therefore Australia with redoubled activity should push forward her military preparations.

The citizens of the island commonwealth were no doubt proud of their land forces, but their patriotism was even more strikingly embodied and their hearts more truly wedded to the "Royal Australian Navy." Looking forward to the creation of a full Australian Fleet Unit, the Commonwealth had already constructed a battle cruiser (*Australia*), 4 protected cruisers, 3 destroyers, 2 torpedo boats, 2 gunboats, and 2 training ships; and while the colonists took great pleasure in their embryo navy, and enjoyed the consciousness that it was constantly cruising in Australian waters ready to repel any possible enemy, they were also quite emphatic in promising that, should war ever come, the Australian ships would be placed loyally at the disposal of the Imperial Government. It was therefore with surprise and pain that the Australians received the news in April that Mr. Churchill, First Lord of the Admiralty (i.e. Imperial Minister of the Navy) had proposed the contribution by the colonies of ships to form an Imperial flying squadron which would be at the disposal of the British Admiralty in times of peace and of war. Japan, as Britain's ally, would amply protect Australia. Mr. Millen, then Australian Minister of Defense, seized upon eight salient and disagreeable features of Mr. Churchill's speech: (1) it signalized the failure of the Admiralty to live up to the agreement of 1909; (2) in disregarding that agreement it destroyed the basis upon which Australia had built up its fleet unit at a cost of several millions of pounds; (3) the statement that battle cruisers were not needed in the Pacific was inconsistent with the view taken by the Admiralty in 1909, when it issued a memorandum emphasizing the necessity of a complete fleet unit in the Pacific, whereof "the armored cruiser is an essential part"; (4) it would replace a definite coöperative policy of naval defense in the Pacific by an uncoördinated and ephemeral scheme without permanence and without clear aim; (5) it would substitute ineffective and isolated units for a powerful joint Imperial fleet in the Pacific, by withdrawing the Australian battle cruisers; (6) it would place a new and unjustifiable reliance upon the Anglo-Japanese Alliance; (7) it ignored those "other considerations" which are so important from a wide Imperial point of view, and upon which the Admiralty laid such stress in 1909; and (8) without previously consulting or even notifying the Dominions, Mr. Churchill had announced a vital departure from the policy agreed upon between the Dominion and Imperial Governments. While thus severely criticising Mr. Churchill's utterance, Mr. Millen ardently rushed to the defense of the Commonwealth's policy, and went on to affirm that if, as Mr. Churchill suggested, the Australian battle cruisers were incorporated into an Imperial squadron for operation in European waters, Australia would be spending two-thirds of her naval appropriation on vessels for service far away from Australia; and if such a blow were delivered to their pride in their local navy, the Australians would hardly devote themselves with such enthusiasm to the arduous task of training recruits for the navy or vote with such generosity appropriations for naval expenditure. Most of all Mr. Millen resented the fickleness of the British Government: "Almost before the foundation of the policy inaugurated five years ago is laid, we are urged to adopt modifications so radical as to amount virtually to abandonment. In these circumstances there is little room for surprise if the simple faith with which Australia accepted the Admiralty as its guide on the former occasion should now give place to hesitancy and amazement at Mr. Churchill's pronouncement. . . . Australia is irrevocably pledged, and will pursue her determination to a consistency in the policy on which she embarked on the advice of the Imperial Government five years ago. She will not be deflected from her course by the pronouncement of the First Lord of the Admiralty, for she regards the task she has undertaken as vital to the cause of Imperial defense and Imperial union, and as the essential safeguard for her own protection." Subsequent declarations of Mr. Millen, on Empire Day (May 25) and in June, only served to strengthen the impression that although Australia was loyal, she was determined to be loyal in her own way —by maintaining her local navy. It was while the colony and the mother country were thus unhappily in disagreement, that the war came, and with it an opportunity for Australians to prove the loyalty of their hearts and the prowess of their warships.

Australia in the War. From the very first hint of the possibility of a general European war, public opinion in Australia was keenly alive to the situation and enthusiastically patriotic. As early as July 31, Mr. Cook, then Premier, declared "All Australian resources are for the Empire's preservation and security"; the Melbourne *Argus* made bold to promise that "Our fleet is available if required"; and the Perth *Daily News* remarked that "In time of grave danger we consider the Dominions should strain every nerve to give every penny and send every man to assist the Motherland." That was four days before Great Britain engaged in the War of the Nations. When on August 4 war was at last declared, Australia was swept by an outburst of tremendous enthusiasm. The Government had already begun to make plans for placing an expeditionary force, together with the Royal Australian Navy, at the disposal of the Empire. Now the volunteering began for an expeditionary force of 20,000, and the recruits were sent for a few weeks to a training camp under the charge of Brig.-Gen. W. T. Bridges. These 20,000 volunteers, constituting a complete infantry division and a light horse brigade, were not enough for Australia to contribute to the British cause; for presently the Premier announced that a further contingent of 10,000 would be sent to the front. Meanwhile contributions came pouring in—several millions of dollars were subscribed, horses and supplies were generously donated by private individuals. Most astonishing reports bore testimony to the fact that hundreds of German-Australians soon after the outbreak of the war took the trouble to become naturalized Australian citizens and pledged their support against their one-time Fatherland. All these circumstances bespoke a truly remarkable patriotic solidarity in the Commonwealth. As the Governor-General expressed it, "Australia speaks with one voice, and stands shoulder to shoulder with the other Dominions in defense of the Empire." The replacement of a Liberal ministry by a Labor ministry in September made little difference in this respect; it simply meant that Laborites instead of Liberals would carry forward the work of providing soldiers and funds, of using the public works to give relief to the industrial depression caused by the war, and of offering every assistance to the mother country. On questions of internal policy, however, partisan strife was continued, and with rancor, too, if one may judge from the report in December that Joseph Hume Cook, the Liberal leader, had been reprimanded by the speaker for insults to the chair during a debate on the Commonwealth Bank, and had angrily walked out of the house with all his followers.

Other Events. On account of his feeble health, Lord Denman was replaced as Governor-General of Australia by the Rt. Hon. Ronald Cranfurd Munro-Ferguson, in May, 1914. The new incumbent of the office was a Scotch landowner, a man over fifty years of age, a strong advocate of Home Rule for Ireland; he had been active in British political life and had once served as Liberal Whip under Lord Rosebery, but was entirely deficient in colonial experience. Nevertheless his nomination was well received and his arrival heartily welcomed in Australia. Another event worthy of mention was the conference at Melbourne late in March of the State Premiers; the conference unanimously ratified Earl Grey's scheme for a Dominion House in London, rejected a resolution directed against the appointment of governors from the mother country, referred the question of railway gauges to a commission, and rejected the proposal of Mr. Holman (Premier of New South Wales) to centralize industrial arbitration in the Federal Arbitration Court. It is also interesting to note two events which cast light on the attitude of Australia toward the Irish Home Rule question which agitated the whole Empire during the spring and early summer. On May 4 a monster meeting at Melbourne, attended by over 25,000 persons, expressed its approval of Mr. Asquith's policy. On June 25 the Commonwealth Senate passed a resolution in favor of Irish Home Rule. There were, it is true, some Australians who sided with Ulster; but it was wholly natural that the preponderance of public sentiment should favor the extension to Ireland of the same rights of local self-government which in Australia conduced to such happy results.

For the local affairs of the individual States which compose the Australian Commonwealth, see separate articles on New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania. For detailed information regarding the part taken by Australia in the great war, consult the article on the WAR OF THE NATIONS.

AUSTRIA-HUNGARY, or THE AUSTRO-HUNGARIAN MONARCHY. A monarchy of central Europe, consisting of the Austrian empire, the Hungarian kingdom, and the territory of Bosnia and the Herzegovina. Vienna is the capital of Austria, and Budapest of Hungary. In these cities the common legislature (the delegations) convenes alternately. Vienna is the permanent residence of the sovereign.

AREA AND POPULATION. The table below shows the area and population of Austria by crownlands, of Hungary proper by divisions, of Croatia and Slavonia, of Bosnia, and of the Herzegovina. The population figures for Austria and the Hungarian kingdom are according to the censuses of Dec. 31, 1900, and Dec. 31, 1910. For Bosnia and the Herzegovina, the population figures are according to the censuses of April 22, 1895, and Oct. 10, 1910, and hence the totals given for the monarchy cannot be quite exact. As Bosnia and the Herzegovina were not annexed until 1908, the population of the monarchy as constituted in 1900 was 45,405,267.

	Square Miles	*Population 1900*	*Population 1910*
Lower Austria ...	7,654.4	3,100,493	3,531,814
Upper Austria ...	4,626.3	810,246	853,006
Salzburg	2,761.9	192,763	214,737
Styria	8,658.4	1,356,494	1,444,157
Carinthia	3,987.0	367,324	396,200
Carniola	3,841.7	508,150	525,995
Triest	36.8	178,599	229,510
Görz and Gradisca.	1,126.7	232,897	260,721
Istria	1,918.6	345,050	403,566
Tirol	10,301.7	852,712	946,613
Vorarlberg	1,004.6	129,237	145,408
Bohemia	20,056.6	6,318,697	6,769,548
Moravia	8,579.7	2,437,706	2,622,271
Silesia	1,987.3	680,422	756,949
Galicia	30,307.8	7,315,939	8,025,675
Bukowina	4,031.4	730,195	800,098
Dalmatia	4,954.0	593,784	645,666
Austrian Empire.	115,831.9	26,150,708	28,571,934
Rt. bank Danube.	17,201.9	2,923,401	3,084,404
Left bank Danube.	12,718.9	2,049,611	2,175,924
Between Danube and Theiss ...	18,942.5	3,284,283	3,769,658
Right bank Theiss..	12,289.2	1,674,241	1,769,681
Between Theiss and Maros	14,009.6	2,054,712	2,141,769
Transylvania	22,318.1	2,476,998	2,678,367
Fiume	8.1	38,955	49,806
Hungary	109,216.1	16,838,255	18,264,533
Croatia and Slavonia ...	16,425.1	2,416,304	2,621,954
Hung. King...	125,641.2	19,254,559	20,886,487
Austria and Hungary ...	241,473.1	45,405,267	49,458,421
Bosnia	16,239.4	1,348,581	1,631,006
Herzegovina	3,528.5	219,511	267,038
Civil population.	....	1,568,092	1,898,044
Military	....	22,944	33,758
Bos. and Herz.	19,767.9	* 1,591,036	† 1,931,802
Monarchy	261,241.0	46,996,303	51,390,223

* Census of April 22, 1895. † Census of Oct. 10, 1910.

The population according to vernacular was returned as follows at the 1910 census, for Austria and for Hungary proper:

	Austria		*Hungary*	
	No.	*Per Cent*	*No.*	*Per Cent*
German	9,950,266	35.58	1,903,357	10.40
Magyar	10,974	.04	9,944,627	54.50
Bohemian, Moravian, Slovak.	6,435,983	23.02	....	....
Slovak	....	....	1,946,357	10.70
Polish	4,967,984	17.77	....	....
Ruthenian	3,518,854	12.58	464,270	2.50
Servian and Croatian	783,334	2.80	656,324	3.60
Rumanian	275,150	0.98	2,948,186	16.10
Slovene	1,252,940	4.48	....	....
Italian and Ladin	768,422	2.75	....	....
Other *	608,062	....	401,412	2.20
Total	28,571,934	....	18,264,533	....

* Including, in Austria, foreigners, of whom about 300,000 are Magyars.

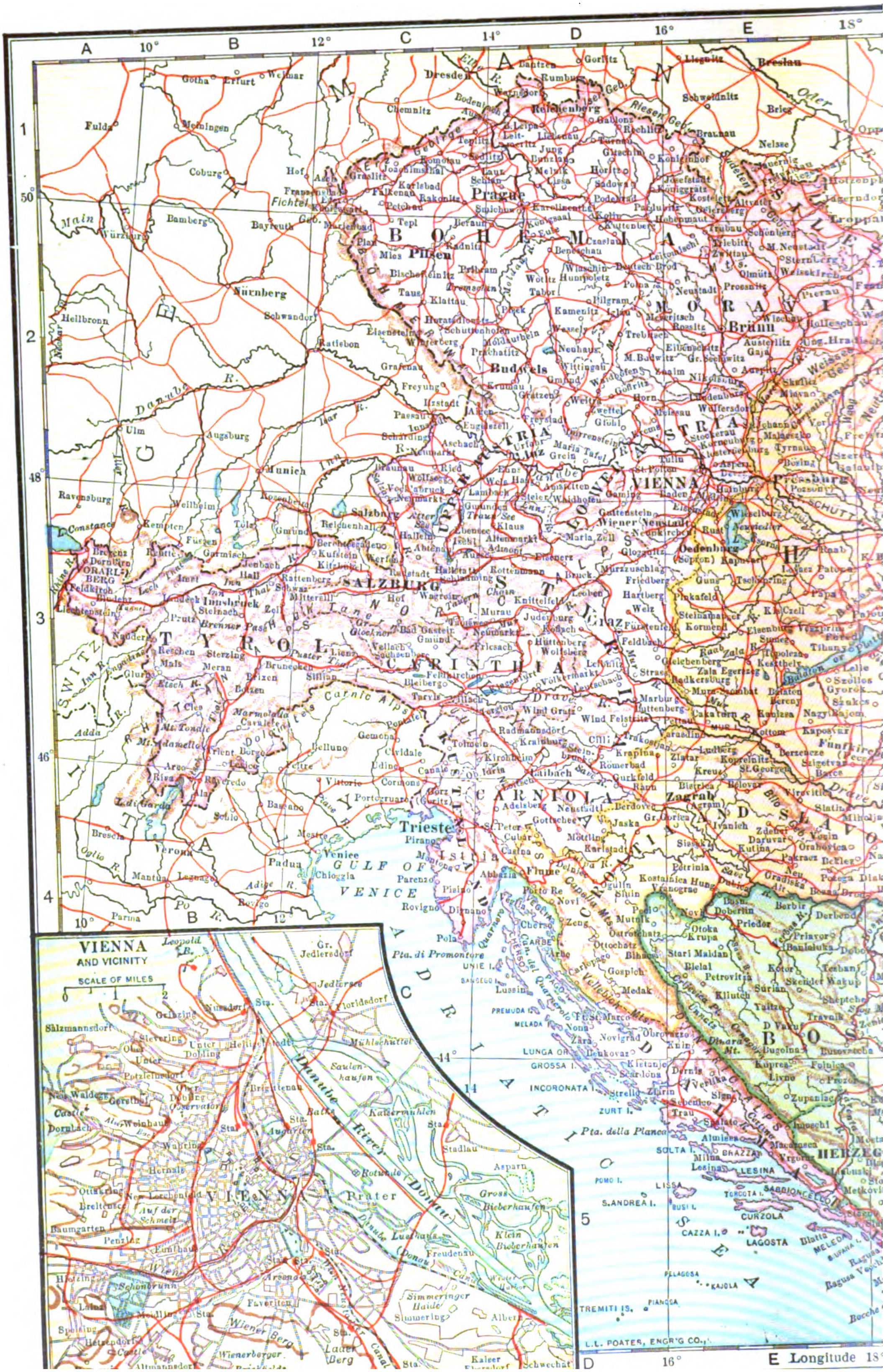
The following figures are for Croatia and Slavonia, not included above: Croatian, 1,638,354 (62.5 per cent); Servian, 644,955 (24.6); German 134,078 (5.1); Magyar, 105,948 (4.1); Slovak, 21,613 (0.8); Ruthenian, 8307 (0.3); Rumanian, 846; other, 67,843 (2.6). In 1910, the *de facto* population of the monarchy (except the military in Bosnia and the Herzegovina) was 51,356,465; of these, the number of inhabitants returned as German-speaking was 12,010,669; Magyar, 10,067,992; Bohemian, Moravian, and Slovak, 8,475,292; Polish, 5,019,496; Ruthenian, 3,998,872; Croatian and Servian, 5,545,531; Slovene, 1,349,222; Rumanian, 3,224,755; Italian and Ladin, 804,271; other (including foreigners in Austria to the number of 608,062), 860,365; total, 51,356,465.

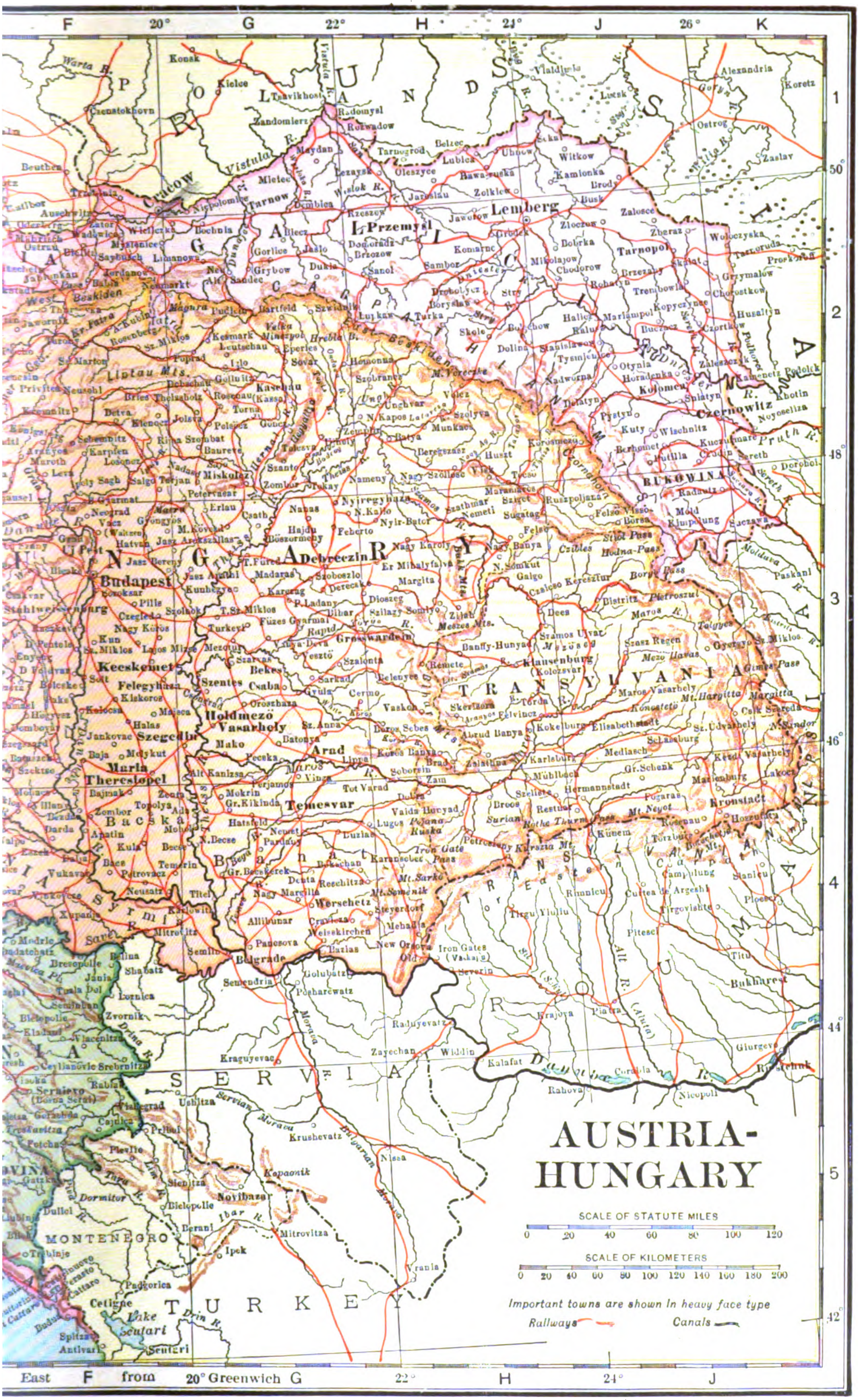
The table below shows the population (exclusive of the military in Bosnia and the Herzegovina) according to the principal cults in 1910: Roman Catholics, *R.C.*; Greek and Armenian Catholics, *G.A.*; Orthodox (adherents of the Eastern Church), *Orth.*; Evangelicals of the Augsburg Confession, *Augs.*; Evangelicals of the Helvetian Confession, *Helv.*; Mohammedans, *Moh.*:

	Aust.	*Hung.*	*Bos.-Herz.*	*Monarchy*
R. C.....	22,530,169	10,888,138	434,061	33,852,368
G. A. ...	3,419,458	2,025,508	8,136	5,453,102
Orth. ...	667,065	2,987,163	825,418	4,479,646
Augs. ...	444,307	1,340,143	5,854	1,790,304
Helv. ...	144,379	2,621,329	488	2,766,196
Jews ...	1,313,687	932,458	11,868	2,258,013
Moh.	....	....	612,137	612,137
Other ...	52,869	91,748	82	144,699
Total	28,571,934	20,886,487	1,898,044	51,356,465

Of the inhabitants of Austria in 1910, males numbered 14,034,022 and females, 14,537,912; Hungary proper, 9,062,935 and 9,201,598; Croatia and Slavonia, 1,282,398 and 1,339,556 (Hungarian kingdom, 10,345,333 and 10,541,154); Bosnia and the Herzegovina (exclusive of the military to the number of 33,758), 994,852 and 903,192; total, 25,374,207 and 25,982,258.

The 1910 census disclosed in Austria 151 towns and cities with over 10,000 inhabitants; there were seven cities with over 100,000. In Hungary proper, there were 85 towns and cities with over 10,000 inhabitants, and two with over 100,000; in Croatia and Slavonia, seven towns and cities with over 10,000. Population of the larger Austrian towns and cities, Dec. 31, 1910: Vienna, 2,031,498; Prague, 223,741; Lemberg,


A
B
C
D
E
10°
12°
14°
16°
18°
1
2
3
4
5
50°
48°
46°
44°
BOHEMIA
MORAVIA
AUSTRIA
UPPER AUSTRIA
LOWER AUSTRIA
SALZBURG
TYROL
CARINTHIA
STYRIA
CARNIOLA
CROATIA
SLAVONIA
BOSNIA
HERZEG
ITALY
GERMANY
SWITZ.
VORARLBERG
Istria
GULF OF VENICE
ADRIATIC SEA
Prague
Pilsen
Budweis
Brünn
VIENNA
Pressburg
Linz
Salzburg
Innsbruck
Graz
Laibach
Trieste
Venice
Zagrab (Agram)
Fiume
Munich
Nürnberg
Dresden
Breslau
Danube R.
Drave R.
Save R.
Carnic Alps
L. Constance
VIENNA
AND VICINITY
SCALE OF MILES
0
1
2
Danube River
Donau
Prater
Schönbrunn
Wiener Berg
L.L. POATES, ENGR'G CO.
Longitude


AUSTRIA-HUNGARY
SCALE OF STATUTE MILES
0 20 40 60 80 100 120
SCALE OF KILOMETERS
0 20 40 60 80 100 120 140 160 180 200
Important towns are shown in heavy face type
Railways
Canals
East F from 20° Greenwich G 22° H 24° J
F 20° G 22° H 24° J 26° K
1 2 3 4 5
50° 48° 46° 44° 42°
RUSSIAN POLAND
GALICIA
CARPATHIAN MTS.
BUKOWINA
HUNGARY
TRANSYLVANIA
TRANSYLVANIAN ALPS
ROUMANIA
SERVIA
MONTENEGRO
TURKEY
Cracow
Lemberg
Przemysl
Tarnopol
Czernowitz
Budapest
Debreczin
Grosswardein
Klausenburg
Kronstadt
Hermannstadt
Temesvar
Szegedin
Belgrade
Bukharest
Danube R.

206,113; Triest, 160,993 (with district, 229,510); Cracow, 154,141 (including 2255 inhabitants of Plaszów, annexed in 1912); Graz, 151,781; Brünn, 125,737; Czernowitz, 87,113; Pilsen, 80,445; Königliche Weinberge (Vinohrady Královské), 77,120; Žižkow, 72,173; Pola, 58,562; Linz, 67,817; Przemyśl, 54,078; Innsbruck, 53,194; Smichow, 51,791; Budweis, 44,538; Kolomea, 42,676; Laibach, 41,727; Aussig (Ustinad Labem), 39,301; Mährisch Ostrau, 36,754; Tarnów, 36,731; Reichenberg, 36,350; Salzburg, 36,188; Drohobycz, 34,665; Tarnopol, 33,871; Stanislau, 33,328; Wiener-Neustadt, 32,874; Prossnitz, 31,462; Görz, 30,995; Stryj, 30,895; Troppau, 30,762; Trient, 30,049; Gablonz an der Neisse, 29,521; Klagenfurt, 28,911; Marburg, 27,994; Teplitz-Schönau, 26,777; Eger, 26,619; Iglau, 25,914; Brüx, 25,577; Neusandez, 25,004. Population of the larger towns and cities of Hungary (including Croatia and Slavonia), Dec. 31, 1910: Budapest, 880,371; Szeged, 118,328; Szabadka (Maria-Theresiopel), 94,610; Debreczen, 92,729; Zágráb (Agram), 79,038; Pozsony, (Pressburg), 78,223; Temesvár, 72,555; Kecskemét, 66,834; Nagy-Várad (Grosswardein), 64,169; Arad, 63,166; Hódmező-Vásárhely, 62,445; Kolozsvár (Klausenburg), 60,808; Ujpest (Neupest), 55,197; Miskolcz, 51,459; Pécs (Fünfkirchen), 49,822; Fiume, 49,806; Györ (Raab), 44,300; Kassa (Kaschau), 44,211; Brassó (Kronstadt), 41,056; Nyíregyháza, 38,198; Székesfehérvár (Stuhlweissenburg), 36,625; Kiskunfélegyháza, 34,924; Makó, 34,918; Szatmar-Németi, 34,892; Czegléd, 33,942; Sopron (Oedenburg), 33,932; Ujvidék (Neusatz), 33,590; Nagyszeben (Hermannstadt), 33,489; Szentes, 31,593; Eszék (Esseg, Osjek), 31,388; Szombathely (Steinamanger), 30,947; Zombor, 30,593; Jászberény, 28,675; Zenta, 29,666; Szolnok, 28,778; Nagykőrös, 28,575; Hajduböszörmény, 28,159; Eger (Erlau), 28,052; Versecz (Werschetz), 27,370; Nagykikinda, 26,795; Nagybecskerek, 26,006; Mezötúr, 25,835; Maros-Vásárhely, 25,517. Sarajevo, the chief town of Bosnia, had, in 1910, 51,919 inhabitants, and Mostar, in the Herzegovina, 16,392.

The movement of the population is reported as follows (births and deaths each including stillbirths):

		Marriages	*Births*	*Deaths*
Austria	1910	214,970	928,545	602,046
	1911	217,373	898,702	628,305
Hungary	1910	179,537	758,566	506,856
	1911	193,482	747,916	539,645
	1912	182,273	782,231	508,062
Bosnia-Herz.	1910	20,651	77,348	52,010
	1911	20,763	76,911	49,840
	1912	16,323	82,142	48,564

Rate per thousand inhabitants of marriages (M), living births (B), total deaths (D), and stillbirths (S):

		M	*B*	*D*	*S*
Austria	1900	8.29	37.45	25.49	1.07
	1905	7.85	33.96	25.22	0.89
	1910	7.59	32.63	21.27	0.82
	1911	7.61	31.45	21.99	0.72
Hungary	1905	8.5	36.1	28.1	0.7
	1910	8.6	35.7	23.6	0.8
	1911	9.2	35.0	25.1	0.7

Emigration of Austro-Hungarian subjects in 1908, 101,275 (of whom 52,214 from Austria); in 1909, 272,266 (143,532); in 1910, 278,240 (148,638); in 1911, 160,751 (90,134); in 1912, 246,300 (131,227).

Education. Elementary instruction in both Austria and Hungary is free and compulsory. At the end of 1910 and 1911 respectively, elementary schools numbered 23,847 (including 1208 private schools) and 24,226 (1261); teachers, 108,006 and 110,607; pupils, 4,520,138 and 4,533,734; children of school age, 4,818,870 and 4,885,504; training colleges, 142 and 148. In 1911, elementary schools in which German was the language used numbered 9180; Czech, 6033; other Slav languages, 7809; Italian, 738; Rumanian, 179; Magyar, 5; other languages, 4; more than one language, 278. In 1913 there were 343 gymnasia, with 108,838 students, and 148 realschulen, with 49,151. Besides many technical, professional, and special schools, there are 8 government technical high schools. In the winter semester of 1913–14, teachers and students respectively at these technical high schools were as follows: Vienna, 183 and 3177; Graz, 54 and 817; Prague (German), 86 and 900; Prague (Bohemian), 151 and 2817; Brünn (German), 102 and 924; Brünn (Bohemian), 73 and 569; Lemberg, 98 and 1791; Vienna agricultural high school, 86 and 1135. There are 8 universities maintained by the State; teachers and students in the winter semester of 1913–14: Vienna (German), 666 and 10,310; Prague (German), 225 and 2282; Prague (Bohemian), 249 and 4713; Graz (German), 199 and 2203; Cracow (Polish), 195 and 3344; Lemberg (Polish), 186 and 5871; Innsbruck (German), 139 and 1480; Czernowitz (German), 61 and 1194. Of the total university students, 2701 were women.

In Hungary, the elementary schools, grammar schools, and repetition courses comprise the "primary" schools. These schools in 1912 numbered 19,521, with 49,150 teachers and 2,969,444 pupils. The number of children of school age was 3,548,365. There were 96 training colleges, with 1229 teachers and 10,340 students. Gymnasia in 1912 numbered 192, with 371 teachers and 66,863 students; realschulen, 43, with 1044 teachers and 14,938 students. There are many special and professional institutions. Five universities are maintained by the State: Budapest, with 412 teachers and 6962 students in 1912; Zágráb (Agram), 97 and 1096; Kolozsvár (Klausenburg), 137 and 2157; and founded in 1912, Pozsony (Pressburg) and Debreczen.

Agriculture. Austria-Hungary is one of the leading agricultural countries of Europe. Its crops include all the common European products and various subtropical fruits and plants. The distribution of land in 1910 is stated as follows, in hectares:

	Austria		*Hungary*	
	Ha.	*Per cent*	*Ha.*	*Per cent*
Arable land	10,641,996	35.37	13,916,061	42.82
Gardens	377,965	1.26	427,492	1.32
Vineyards	223,077	0.74	309,813	0.95
Meadows	....	.....	3,191,686	9.82
Pastures, etc.	7,171,779	23.90	3,977,022	12.24
Woodland	9,788,080	32.63	8,906,505	27.41
Lakes, marsh, etc.	105,024	0.35	66,254	0.20
Unproductive (untaxed)	1,692,872	5.63	1,701.604	5.24
Total	30,000,793	100.00	32,496,487	100.00

. The leading products include cereals, potatoes, and other vegetables, sugar beets, fruits, flax, hops (in Bohemia); tobacco (especially in Hungary, and hay. Area (in hectares) and yield (in metric quintals) of some of the important crops:

	Hectares		*Quintals*	
	1912-13	*1913-14*	*1912-13*	*1913-14*
Austria:				
Wheat	1,212,892	....	16,227,547	....
S. Beets	254,639	....	68,629,875	....
Rye	4,935,425	4,718,781	93,451,550	84,651,210
Barley	1,092,131	....	17,501,568	....
Oats	1,904,718	....	26,778,770	....
Corn	285,581	....	3,379,655	....
S. Beets	254,639	....	68,629,877	....
Hungary proper:				
Wheat	3,115,962	3,489,724	41,190,287	34,139,144
Rye	1,079,904	1,117,205	13,278,594	12,117,271
Barley	1,168,446	1,123,789	17,380,022	14,619,447
Oats	1,166,957	1,074,629	14,487,030	13,146,071
Corn	2,918,767	....	46,248,082	....
S. Beets	182,088	....	47,758,377	....
Croatia-Slavonia:				
Wheat	....	300,000	....	2,100,000
Rye	....	66,000	....	528,000
Barley	....	52,800	....	422,400

Live stock has been reported as follows, in Austria (1910), in Hungary (1911), and in Bosnia and the Herzegovina (1911): horses, 1,802,848, 2,350,647, and 221,981; cattle, 9,160,009, 7,318,088, and 1,309,922; sheep, 2,428,101, 8,547,042, and 2,499,422; goats, 1,256,778, 426,975, and 1,393,068; swine, 6,432,080, 7,578,690, and 527,271. Live stock as reported for Hungary in 1913: horses, 2,005,019; mules and asses, 17,062; cattle, 6,206,867 (including 161,683 buffaloes); sheep, 6,659,858; goats, 268,986; swine, 6,824,657.

Mining and Metals. In Austria, the total reported value of mining products (exclusive of salt, petroleum, etc.) increased from 317,833,337 kronen in 1908 to 320,107,395 in 1911 and 352,545,531 in 1912; furnace products increased in value from 136,920,722 kronen in 1908 to 155,669,112 in 1911 and 179,212,612 in 1912. The quantity and value of the more important minerals produced in 1912 were as follows: coal, 15,797,890 metric tons, 162,600,458 kronen; lignite, 26,283,690 tons, 141,045,962 kr.; iron ore, 2,926,686 tons, 27,364,903 kr.; lead ore, 27,952, tons, 6,567,943 kr ; silver ore, 21,794 tons, 4,076,705 kr.; zinc ore, 34,675 tons, 2,887,256 kr.; mercury ore, 117,780 tons, 2,882,630 kr.; graphite, 45,375 tons, 1,869,998 kr.; copper ore, 17-354 tons, 1,668,525 kr.; gold ore, 603,840 kr. The metal production in 1912 included: raw iron, 1,759,851 metric tons, valued at 143,893,646 kr.; zinc, 17,298 tons, 10,555,550 kr.; lead, 19,993 tons, 9,521,889 kr.; silver, 49,355 kilos, 4,905,366 kr.; copper 3057 tons, 4,613,740 kr.; mercury, 763 tons, 3,972,912 kr.; gold, 204 kilos, 662,775 kr. The output of petroleum (and ozocerite) in Galicia declined from 2,088,457 metric tons in 1909 to 1,768,189 in 1910 and 1,489,782 in 1911 (1,487,842 tons petroleum, 1940 tons ozocerite); the 1911 output was valued at 46,994,393 kr. for petroleum and 2,614,472 kr. for ozocerite.

In Hungary the value of the coal output in 1911 was 15,481,000 kr., and in 1912, 16,904,000 kr.; lignite, 77,200,000 and 80,697,000; iron ore, 13,334,000 and 15,379,000; raw iron, 43,848,000 and 46,447,000; silver, 907,000 and 1,023,000; gold, 10,469,000 and 9,354,000.

Commerce. The tables below show, in thousands of kronen, the trade of the common customs territory. Imports of merchandise for home consumption, of total merchandise, of coin and bullion, and the total imports:

	Mdse. Home Consump.	*Total Mdse.*	*Coin and Bullion*	*Total Imports*
1902	1,720,835	1,770,281	166,034	1,936,315
1907	2,501,974	2,587,147	43,839	2,630,986
1911	3,191,711	3,275,208	41,414	3,316,622
1912	3,556,797	3,669,882	19,827	3,689,709

Exports of domestic merchandise, of total merchandise, of coin and bullion, and the total exports, in thousands of kronen:

	Domestic Mdse.	*Total Mdse.*	*Coin and Bullion*	*Total Exports*
1902	1,913,598	1,999,396	82,007	2,081,403
1907	2,457,286	2,658,085	79,456	2,737,541
1911	2,404,304	2,582,560	132,915	2,715,475
1912	2,733,855	2,926,665	178,420	3,105,085

The more important imports of merchandise for consumption in 1912 and 1913 respectively were valued as follows, in thousands of kronen: raw cotton, 329,785 and 336,057; wool, 161,971 and 141,478; coal, coke, etc., 220,905 and 262,827; coffee, 102,020 and 93,390; corn, 105,682 and 83,806; tobacco, 61,987 and 46,560; eggs, 66,574 and 68,518; rice, 28,351 and 36,242; hides and skins, 102,254 and 115,571; silk and its manufactures, 123,144 and 114,408; flax, hemp, and jute, 89,935 and 65,910; machinery, 100,399 and 80,837. Leading exports of domestic produce in 1912 and 1913 respectively, in thousands of kronen: sugar, 254,076 and 292,880; sawn timber, 164,036 and 157,094; eggs, 144,152 and 137,372; rough timber, 92,073 and 90,399; lignite, 78,508 and 76,425; glass and glassware, 77,715 and 88,264; leather gloves and shoes, 54,050 and 60,628; malt, 66,143 and 55,697; woolen goods, 70,001 and 64,809; cattle, 36,457 and 44,122; hops, 49,597 and 38,826; beer (in casks), 16,252 and 18,817; horses, 32,206 and 15,489; bed feathers, 19,138 and 19,098; fowl, 16,177 and 15,960.

In 1912, in the special trade, the imports and exports of raw materials were valued at 2,006,124,000 and 961,320,000 kronen respectively; partially manufactured materials, 574,865,000 and 511,130,000; manufactures, 975,808,000 and 1,261,405,000; total, 3,556,797,000 and 2,733,855.

The special trade in merchandise by principal countries, in thousands of kronen:

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
Germany ...	1,268,204	1,405,604	957,974	1,114,145
United States	288,760	348,575	58,452	68,887
U. Kingdom.	229,448	245,362	216,279	257,873
Russia	209,215	228,811	96,819	91,328
British India	219,739	199,314	51,574	63,484
Italy	141,629	161,662	222,133	289,399
France	112,417	119,800	74,955	84,270
Rumania ...	78,150	102,144	128,974	134,418
Switzerland .	85,336	91,120	112,096	117,287
Brazil	75,876	80,010	11,693	13,312
Turkey	60,350	73,198	126,461	131,642
Belgium	50,217	56,456	22,128	26,186
Argentina ..	30,709	47,110	17,877	21,974
Servia	42,612	40,771	37,356	40,848
Total including other.	3,191,711	3,556,797	2,404,304	2,733,855

Shipping. Vessels entered at Austrian seaports in 1911, 167,483, of 24,836,706 tons; in

1912, 167,113, of 25,566,314 tons (of which 154,747, of 23,739,584 tons, Austro-Hungarian). Vessels cleared at Austrian seaports in 1911, 167,209 of 24,887,721 tons; in 1912, 167,122, of 25,569,882 tons (of which 154,787, of 23,741,146 tons, Austro-Hungarian). Vessels entered at Hungarian (including Croatian) ports in 1911, 25,021, of 3,815,463 tons; cleared, 24,981, of 3,802,816 tons.

COMMUNICATIONS. The length of railway in operation in the Monarchy, as reported for Jan. 1, 1913, was 47,037 kilometers (29,226 miles). Of the total, 23,200 km. were in Austria, 21,881 in Hungary, and 1956 in Bosnia and the Herzegovina. About seven-tenths of the Austrian lines and about four-fifths of the Hungarian are owned and operated by the State.

The length of telegraph line in Austria at the end of 1911 was 47,076 km., with 237,847 km. of wire and 7039 offices; thereof 40,577 km. of line, 40,577 km. of wire, and 4589 offices belonged to the State. In 1912, Hungary had 26,202 km. of telegraph line, 153,803 km. of wire, and 4765 offices. The length of telegraph line reported for Bosnia and the Herzegovina is 3269 km., and of wire 7526 km., the number of offices being 180. Reported length of telephone wire in Austria in 1911, 411,885 km.; in Hungary, 344,633 km.; in Bosnia and the Herzegovina, 1104 km. Post offices in Austria in 1911, 9656; in Hungary, 6489; in Bosnia and the Herzegovina, 185; in addition, there were 36 Austro-Hungarian post offices in foreign territory.

FINANCE. The monetary unit is the krone, whose par value is 20.263 cents. The cost of administering the common affairs of the monarchy is borne by the Government of Austria and by the Government of Hungary in a proportion agreed to by their parliaments and sanctioned by the sovereign. The agreement renewed for ten years in 1907 provides that the net proceeds of the common customs be applied to the common expenditure, and the remaining expenditure be satisfied by Austria in the proportion of 63.6 per cent and by Hungary 36.4 per cent. In 1909 the expenditure of the monarchy was 643,578,124 kronen (440,391,996 ordinary and 203,186,128 extraordinary); in 1910, 573,750,039 kr. (461,617,783 and 122,132,254). Net customs revenue in 1909, 197,979,735; in 1910, 228,451,954. Contribution of Austria in 1909, 283,400,575 kr.; in 1910, 219,609,773. Contributions of Hungary in 1909, 162,197,814 kr.; in 1910, 125,688,612. The budget for 1913 showed estimated ordinary expenditure of 497,950,169 kr.; extraordinary, 90,424,819; total, 594,374,988. The total estimated expenditure for 1913 was divided as follows: ministry of foreign affairs, 18,954,716 kr.; finance, 5,143,953; board of control, 363,540; army, 425,755,569; navy, 144,157,210.

In Austria, revenue and expenditure in 1910 amounted to 2,895,491,963 kr.; in 1911, 3,093,034,359 and 3,006,163,122. Estimated revenue for 1913, 3,137,481,539 kr. (2,943,804,420 kr. ordinary and 193,677,119 kr. extraordinary); estimated expenditure, 3,137,202,566 kr. (2,799,063,052 kr. ordinary and 338,139,514 kr. extraordinary). The larger estimated expenditures included: railways, 696,965,220 kr. ordinary and 143,759,000 kr. extraordinary; public debt, 509,681,469 and 641,157.

In Hungary, revenue and expenditure in 1910 amounted to 2,074,548,000 kr. and 1,901,666,000 kr. respectively; in 1911, 1,830,779,496 and 1,768,348,545. Estimated revenue for 1913, 2,072,809,031 kr. (1,834,299,156 kr. ordinary and 238,509,875 kr. extraordinary); estimated expenditure, 2,072,754,196 kr. (1,721,781,426 kr. ordinary), 106,928,930 transitory, and 244,043,840 for sinking fund. The larger items of estimated expenditure included: ministry of commerce, 484,472,250 kr.; finance, 273,822,068; Hungarian public debt, 226,137,396.

In Bosnia and the Herzegovina, the estimated revenue and expenditure for 1911 were 79,129,475 kr. and 79,535,715 kr. respectively.

No debts are contracted by the monarchy, in accordance with the terms under which the Union was effected in 1867. The total general debt, contracted before that time, amounted on Jan. 1, 1913, to 5,158,396,373 kr., of which 5,130,183,768 kr. formed the consolidated debt. On the same date, the Austrian debt was 7,312,753,129 kr., of which 6,965,111,048 kr. formed the consolidated debt. The Hungarian debt in 1911 stood at 6,390,863,683 kr.

ARMY. Austria-Hungary maintains a common army, whose composition is affected naturally by the existence of the dual monarchy, although in time of war it is organized to act as a common force. As in other countries of Europe engaged in the great European war, the strength and organization of the army of Austria-Hungary underwent considerable change and expansion in 1914. Previous to the outbreak of the war the peace establishment had been estimated at 425,000 men and the war basis 2,300,000 men. The army bill of 1912 served to add about 45,000 men by 1917 under normal conditions. Duke Franz Ferdinand, who was heir apparent to the throne, was assassinated on June 28, 1914, after he was appointed inspector-general of the Austro-Hungarian forces. At the beginning of 1914 the Austro-Hungarian army comprised 16 army corps of 33 infantry divisions and 76 brigades. There were eight cavalry divisions and in addition eight Austrian landwehr divisions, eight Hungarian infantry divisions, and two Hungarian cavalry landwehr divisions. At this time the exact peace strength was not available, and naturally there were no figures for the army as augmented on mobilization. It was estimated that 20 corps and 10 cavalry divisions could be put into the field. At the outbreak of the war an authoritative statement was published on the disposition of the Austro-Hungarian army by corps and was as follows:

The first army corps, with one cavalry division, at Cracow; second army corps, with one cavalry division, at Vienna; third army corps at Graz; fourth army corps, with one cavalry division, at Budapest; fifth army corps, with one cavalry division, at Pressburg; sixth army corps at Kraschau; seventh army corps, and one cavalry division, at Temesvar; eighth army corps at Prague; ninth army corps at Leitmeritz; tenth army corps, with one cavalry division, at Przemysl; eleventh army corps, with two cavalry divisions, at Lemberg; twelfth army corps at Hermanstadt; thirteenth army corps at Agram; fourteenth army corps at Innsbruck; fifteenth army corps at Sarajevo; sixteenth army corps at Ragusa. To these must be added eight Austrian Landwehr infantry divisions, eight Hungarian Landwehr infantry divisions, and three Hungarian Landwehr cavalry divisions.

On the Servian and Montenegro frontiers from east to west were the following army corps: the twelfth (Hermanstadt), the seventh (Temesvar), the thirteenth (Agram), and in addition in Bosnia, Herzegovina, and Dalmatia are the fifteenth army corps (Serajevo) and the sixteenth (Ragusa). Behind these, between the seventh and thirteenth army corps, was the fourth army corps (Budapest).

Of military importance also was the Danube Flotilla, which consisted of monitors and patrol boats. The monitors were the *Temes* and the *Bodrop*, built in 1904, each with an armament 2 12 cm. q. f. guns, 1 12 cm. howitzer, and 2 8 mm. machine guns. The *Szamos* and the *Körös*, built in 1892, each armed with 2 12 cm. q. f. guns, 2 7 cm. q. f. guns, and 2 8 mm. machine guns. The *Maros* and the *Leitha*, built in 1871, each armed with 1 12 cm. q. f. gun, 2 47 mm. mitrailleuses, and 1 8 mm. machine gun. These monitors had a complement of about 3 officers and 70 men, and were armored. The guns had a range of 5 kilometers and the machine guns were for close fighting. To these 6 monitors must be added 7 patrol (motor) boats, each armed with 1 machine gun. This flotilla was especially built for service on the northern frontier of Servia.

In 1913 it was announced that two new landwehr regiments of lancers were to be raised and the establishments of the additional cavalry were to be increased. A bayonet for dismounted action was to be given the cavalry, and additional cyclist companies were to be raised, one company to be given to each cavalry division in case of war. In times of peace the cavalry in the Austro-Hungarian army served for three years with the colors, as in the German army. Austria-Hungary had profited by the artillery practice against aëroplanes, which had been carried on in 1913, and it was the opinion of artillery officers that the common shell would prove more effective owing to the sharp-edged splinters and the greater moral effect, and the effect of detonation. It was proposed to add two ammunition wagons with four guns to the field batteries in peace, and increase the strength of the field artillery regiments from 5 batteries to 6 with a substantial increase of the mountain artillery. The heavy artillery of the field army was modernized by the introduction of a new howitzer, the old form of which had been issued from 1899 to 1911, and this weapon was in effective use. While progress in the development of the artillery was slow, yet many trials of heavy and light field howitzers had been made, both on the march and at maneuvers, as well as in target practice. Previous to the outbreak of the war, the chief developments in the Austro-Hungarian army had been towards increasing the strength of the air craft and providing a large increase in machine guns. It was the opinion of military observers that the mobilization of the Austrian army was slow and that the forces were not put into the field as rapidly as they should have been.

NAVY. Number and displacement of warships of 1500 or more tons, and of torpedo craft of 50 or more tons, built and building, July 1, 1914: dreadnoughts (battleships having a main battery of all big guns, that is, 11 or more inches in calibre): built three, of 60,030 tons, building four, of 93,510 tons. Predreadnoughts (battleships of about 10,000 or more tons displacement whose main batteries are of more than one calibre): built six, of 74,613 tons; building, none. Coast-defense vessels (including smaller battleships and monitors): built six, of 41,700 tons; building, none. Battle cruisers, none built or building. Armored cruisers: built two, of 13,380 tons; building, none. Cruisers (unarmored warships of 1500 or more tons): built five, of 13,815 tons; building five, of 21,216 tons. Torpedo-boat destroyers: built 18, of 9450 tons; building, none. Torpedo boats: built 39, of 6852 tons; building 24, of 5886 tons. Submarines: built six, of 1686 tons; building six, of 5370 tons. Total tonnage: built, 221,526; building, 125,982. Austria-Hungary stands eighth among the nations in amount of warship tonnage completed and also in the aggregate of tonnage built and building. In the figures given above, certain vessels are not included, viz.: ships over 20 years old from date of launch unless reconstructed and rearmed within five years; torpedo craft over 15 years old; transports, colliers, repair ships, torpedo-depot ships, and other auxiliaries; vessels not actually begun or ordered, although authorized. The following are the principal characteristics of the *Viribus Unitis*, one of the three dreadnoughts: designed speed, 21 knots; displacement, 20,010 tons; length between perpendiculars, 492 feet; beam, 89 feet; draft, 26 feet; complement, 1000; main battery, 12 12-inch guns; torpedo tubes, four; maximum thickness of armor belt, 11 inches; launched, June, 1911; completed, September, 1912. See BATTLESHIPS; NAVAL PROGRESS; and WAR OF THE NATIONS.

GOVERNMENT. The administration of the monarchy as a whole is directed by the Emperor-King, acting through three ministries (foreign affairs, finance, and war), who are responsible to the two delegations. These bodies, consisting of 60 members each, are elected by the Austrian and Hungarian parliaments respectively; they annually convene, alternately at Vienna and Budapest. They examine the requirements of the common services of the monarchy and advise the parliaments as to necessary appropriations. The common government deals with finance relating to the monarchy as a whole, foreign affairs, the diplomatic, postal, and telegraphic services, and certain State monopolies. Austria and Hungary have each a representative parliament of two houses and a responsible ministry. Each of the Austrian crownlands and Croatia and Slavonia have separate diets. Bosnia and the Herzegovina are administered under the (common) minister of finance.

The sovereign in 1914 was Franz Joseph I, who was born Aug. 18, 1830. He became Emperor of Austria Dec. 2, 1848, and King of Hungary June 8, 1867. The heir presumptive, Franz Ferdinand, nephew of the Emperor, was assassinated at Sarajevo, Bosnia, June 28, 1914. The new heir presumptive, son of the late Archduke Otho Franz Joseph and nephew of the Emperor, is Archduke Karl Franz Joseph, born Aug. 17, 1887.

The common ministry in 1914: Premier and Minister for Foreign Affairs, Stephan (Baron) Burian von Rajecz (appointed January, 1915); finance, Dr. Leon (Ritter) von Bilinski (appointed February, 1912); war, Gen. Alexander (Ritter) von Krobatin (appointed December, 1912). The navy department constitutes a section of the ministry of war; the commandant in 1914 as Admiral Anton Haus (appointed February, 1913).

The Austrian ministry in 1914 (formed Nov. 3, 1911): Premier, Karl (Count) Stürgkh; Minister of the Interior, Dr. Karl (Baron) Heinold von Udynski; worship and public instruction, Dr. Max (Ritter) von Hussarek von Heinlein; finance, Aug. (Baron) Engel de Mainfelden; commerce, Dr. Rudolf Schuster (Edler) von Bonnott; railways, Dr. Zdenko (Baron) von Forster; agriculture, Dr. Franz Zenker; national defense, Gen. Friedrich (Baron) von Georgi; public works, Ottokar Trnka; justice, Dr. Viktor (Ritter) von Hochenburger; without portfolio, Dr. Ladislas von Dlugosz.

The Hungarian ministry in 1914: Premier and Minister of the Interior, Stepan (Count) Tisza; Minister of Finance, János Teleszky; commerce, János (Baron) Harkányi; agriculture, E. (Baron) Ghyllányi de Loz és Bernycze; public instruction and worship, Dr. Jankovich de Jeszanicze; justice, Dr. Eugen de Balogh; national defense, Lieut.-Field-Marshal Samuel (Baron) Hazai; Minister for Croatia and Slavonia, Dr. Theodor (Count) Pejácsevich de Borosjenö és Szeged.

History

The Austrian Reichsrat. In the lower chamber or *Abgeordnetenhaus* of the Austrian *Reichsrat* parliamentary activities were made practically impossible by the disorderly and obstructionist tactics of the Opposition. The German, Polish, Socialist, and Italian deputies, and most of the Czechs, for ordinary purposes would have formed a working majority and might have been able to proceed in a business-like manner; but the radical minority of the Czechs, the Ruthenes, and the representatives of the southern Slavs, acting under the stimulus of an intense nationalism, were willing and able to set at nought the desires of the majority. At the end of December, 1913, the Ruthenians, who had been most troublesome, consented for a time to abandon their obstruction in order that a few important bills might be considered. A bill was passed to raise the exemption on the income tax from 1200 kronen ($240) to 1600 kronen ($330). This reform was at first rejected by the upper chamber or *Herrenhaus*, and a deadlock between the two houses of the *Reichsrat* seemed inevitable. On Jan. 13, 1914, however, a joint conference of both houses was held, with the result that the increased exemption was allowed.

The month was not allowed to pass without a renewal of the obstruction in the Lower House, this time by the Czech minority. Hoping to arrive at an understanding with the Czechs, the Austrian government terminated the session of the *Reichsrat*, and called a series of conferences between German and Czech Bohemians. The quarrels between Germans and Czechs in Bohemia had led in 1913 to the dissolution of the Bohemian Provincial Diet, and the suspension of Bohemian autonomy. Since then, the Bohemian question has been particularly acute. The purpose of the conferences was to discover an acceptable compromise on the main points at issue: (1) whether administrative officials should use German, Czech, or both languages; (2) how the Provincial Diet should be elected; (3) in what manner Bohemia might be divided up into Czech districts and German districts; (4) what should be the constitutional status of Bohemia. Unfortunately the Germans would not consent to the government's proposal to abolish the bilingual régime and to make Czech the official language in the city of Prague; and the Czechs were equally determined not to concede some of the fundamental contentions of the Germans. The conferences were doomed to failure from the start.

On March 5, the *Reichsrat* had been called together again, for the purpose of voting military and financial measures; but as the Czechs were clearly bent on resuming their obstructionist tactics in the *Abgeordnetenhaus*, Count Stürgkh decided to prorogue the *Reichsrat* on March 16. Neither budget nor army bill had been voted. In this emergency the cabinet availed itself of paragraph 14 of the constitution to promulgate for one year the law increasing the annual contingent of recruits for the army; and in place of the consolidated loan of $100,000,000 which had been contemplated, the government issued Treasury Bills to provide for current expenses. The Austrian budget for 1914–15, as published on June 3, showed a total estimated expenditure of over $700,000,000, and called for new loan issues amounting to about $45,000,000. The death of Count Zaleski in December, 1913, left vacant the post of Finance Minister in the Austrian cabinet. Count Zaleski's successor was Baron Engel von Mainfelden.

Hungary. The Lower House of the Hungarian Parliament, like the Lower House of the Austrian *Reichsrat*, was frequently thrown into disorder by the efforts of a violent and irreconcilable Opposition; but in Hungary sterner measures were taken to prevent the Opposition from paralyzing the activities of Parliament. On Jan. 14, 1914, for example, after violent altercations in the Hungarian House of Representatives, Count Karolyi and other Opposition leaders were suspended and ordered to leave the hall. Upon their refusal, the Parliamentary Guard was called in to eject them by force. Within a fortnight of this occurrence, Count Julius Andrassy caused an uproar by insisting upon continuing a speech which the House did not wish to hear. Again the Parliamentary Guard was called in, Count Andrassy and Count Zichy were expelled from the hall, and the Opposition members walked out in a body. Then the remaining members proceeded quietly to pass a Press Law Reform Bill. The Army Bill was likewise passed only after the Opposition had been expelled. In February a 4½ per cent loan of about $100,000,000 was issued by the Hungarian government to provide funds for the repayment of outstanding treasury bonds, for ordinary expenditures, and for the extension of the Hungarian State railways. The Budget debate in the Hungarian Parliament drew to a close on May 6, and a Finance Bill was then introduced, whereby a loan of 400,000,000 kronen ($80,000,000) was to be floated for the payment of Hungary's share in the extraordinary joint naval and military expenditures of the Dual Monarchy, and for sundry other purposes.

After the outbreak of war, in the summer of 1914, a truce was arranged between the government and the Opposition, according to a Berlin dispatch; the various measures necessitated by the war were passed without disagreement; and Count Karolyi and Count Andrassy, the leaders of the Opposition, announced that they would postpone criticism of the ministerial policy until peace should be restored. "The House sent greetings to the army in the field, and expressed admiration for the work accomplished and confidence in the ultimate achievement of a victory which would bring rich advantages to Hungary."

Francis Kossuth (q.v.), a notable figure in Hungarian politics, and the son of Louis Kossuth, died in Budapest on May 25, 1914.

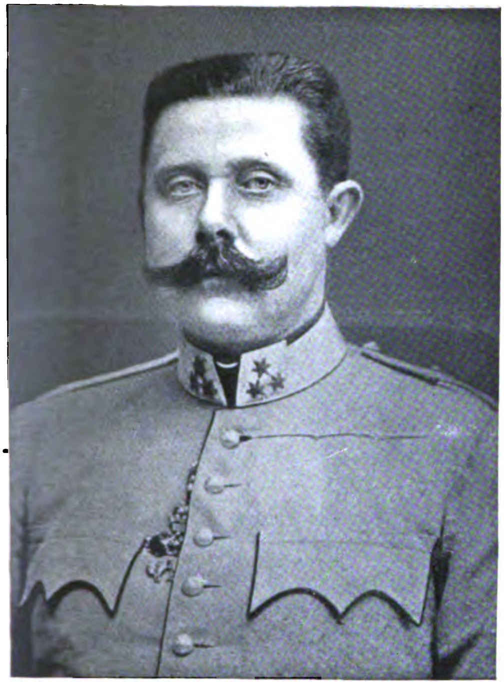
THE DELEGATIONS. Owing to the serious illness of the aged Emperor, Archduke Francis Ferdinand (the heir apparent) represented the Crown at the opening session of the Austrian and Hungarian Delegations at Budapest on April 29. In the light of Austria-Hungary's subsequent declaration of war on Servia, it is interesting to observe that Count Silva Taronca, president of the Austrian Delegation, called forth enthusiastic cheers when he demanded that a stop should be put to the "anti-Austrian propaganda carried on in our frontier districts." And there is a certain grim humor in the repeated affirmation of the solidarity of the Triple Alliance, as well as in Count Berchtold's praise of English diplomacy. At that time, however, Italy's defection from the Triple Alliance was not foreseen, and it was confidently believed that the bonds of the alliance had been drawn more closely than ever by the recent meeting of Count Berchtold with the Marquis di San Giuliano (Italian Foreign Minister) at Abbazia, and by the visits of the German Kaiser to Francis Joseph at Schönbrunn, to Francis Ferdinand at castle Miramar, and to the King of Italy at Rome.

In his statement before the Delegations, Count Berchtold paid great attention to Balkan affairs. He discerned a certain slackening of the tension between the Triple Alliance and the Triple Entente as the result of Great Britain's conciliatory action in the recent Balkan crisis. With Russia he hoped to cultivate a firm friendship. Referring to the estrangement of Rumania from Austria-Hungary, Count Berchtold declared that Rumanian statesmen could not for a moment think of throwing over the old Austro-Rumanian friendship. The Delegations then proceeded to discuss the requirements of the army and navy. The joint army estimates reached the figure of $120,000,000, including $500,000 for military aviation and $6,000,000 for new howitzers and mortars. The navy estimates for 1914–15 amounted to almost $37,000,000, of which sum $10,000,000 constituted the first installment of a new five-year programme. Four new battleships, of 24,500 tons displacement each, were to form the second dreadnought division of the navy. Three fast cruisers were also to be constructed of 4800 tons each, besides six new torpedo gunboats of 800 tons, and two new Danube gunboats. A first-class naval base was to be prepared at Sebenico, and an arsenal at Pola.

THE SUBORDINATE NATIONALITIES. The year 1914 was remarkable for attempts made to conciliate the various minor groups whose nationalist sentiments were responsible for the chronic unrest prevalent within the Hapsburg Empire. To settle the racial question in Bohemia a conference of Czechs and German Bohemians was held, with the unsatisfactory result noted in the first paragraph of this article. The feud between the Poles and the Ruthenes in Galicia, however, was at least modified as the result of a conciliatory effort in January, and both nationalities agreed to an electoral reform which assured to the Ruthenes a larger representation in the Galician *Landtag* (provincial Diet) as well as in the *Landesausschuss* (administrative committee) chosen by the *Landtag*. In Croatia the restoration of constitutional government, begun in the fall of 1913, was completed in the spring of 1914.

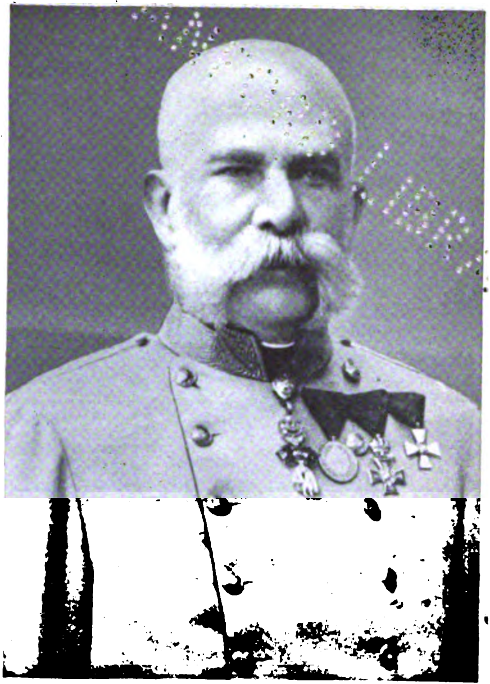
Less fortunate were the dealings of the Hungarian government with the 3,000,000 Rumanians who inhabited Eastern Hungary, the Bukovina, and Transylvania. The announcement that Count Tisza, the Hungarian Premier, was negotiating for the support of the Rumanians, in January, 1914, was met with angry protests from the Magyars. Count Czernin, Austro-Hungarian minister at Bucharest, added fuel to the fire when he publicly declared that the Rumanians in Hungary were not in possession of their proper rights. The rejection by the Rumanians of Count Tisza's kindly overtures did not improve the situation. The meeting in Bucharest of the Rumanian League of Culture, which decried Hungary's treatment of the Rumanians in Transylvania, aroused the Austro-Hungarian press to fury, because it indicated the tendency of Rumania to look for an extension of territory at the expense of Austria-Hungary, and with the support of Russia. Count Tisza deemed the incident sufficiently important to warrant discussion before the Hungarian House of Magnates. It would indeed be an evil day for Austria-Hungary when Russia should aid Rumania to take Transylvania, and Servia to annex Bosnia-Herzegovina. Apprehension was felt in Austria-Hungary, moreover, lest the Russians should add the Ruthenian districts of Hungary and Austrian Galicia, in which there were over 3,000,000 Ruthenes, to the 25,000,000 Ruthenes already owing allegiance to the Czar.

In the course of the Hungarian treason trial, in February, Count Vladimir Bobrinsky described the proselytizing activities of the Russo-Galician Association, of which he was president, and acknowledged its endeavors to spread the Russian Orthodox religion, and to educate the Ruthenes in their own history, but denied that his efforts were directed against the Hapsburg monarchy. In explanation of this State trial, it may be noted that since the Ruthenes in Hungary were mostly Greek Catholics or Uniates (i.e. using the Greek rite but admitting the headship of the Roman pontiff), the Hungarian government had become alarmed at the tendency of the Ruthenes to affiliate with the Russian Orthodox Church, the national church of Russia. Suspecting the existence of an organized propaganda, whose objects were first the conversion of the Ruthenes to the Russian national church, and then the inclusion of the Ruthenes within the Russian Empire, the Hungarian government instituted in 1912 a monster trial of some 189 persons for alleged Russophil propaganda among the Hungarian Ruthenes. The trial was brought to a close on March 3, 1914, when 32 were found guilty of incitement against religion and State, and were sentenced to terms of imprisonment varying from six months to four and a half years. A second Ruthene trial was begun in March, of a journalist, two Orthodox priests, and a law student, on the charge of having conducted an agitation for the annexa-



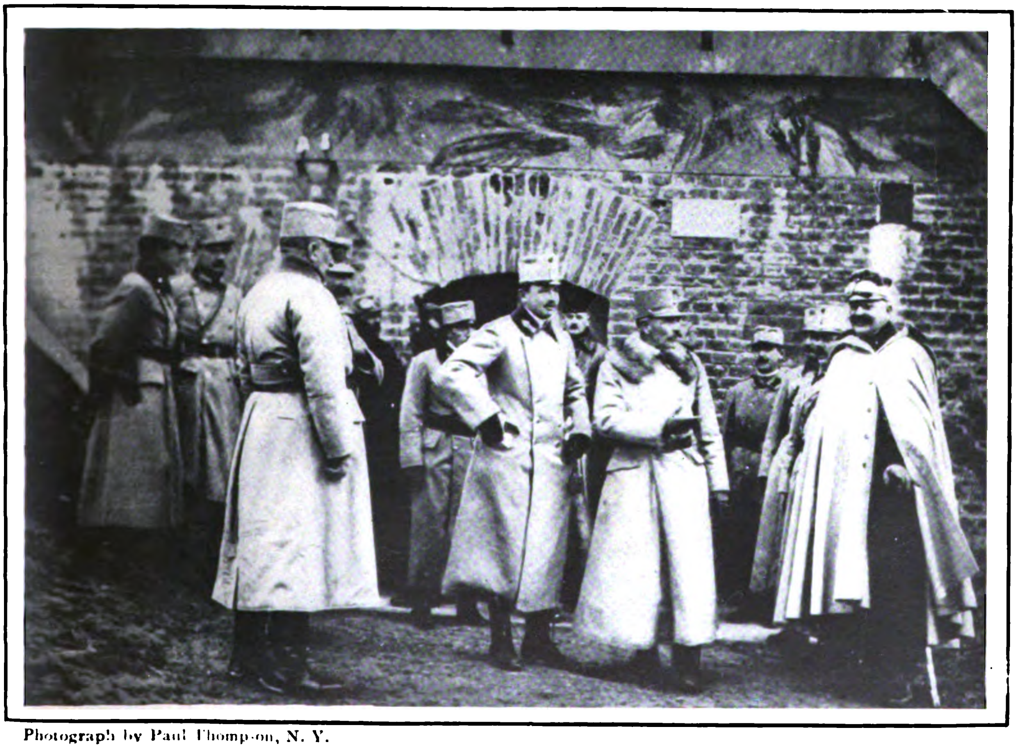
Photograph by Paul Thompson, N. Y.

CROWN PRINCE FRANCIS FERDINAND
ASSASSINATED JUNE 28, 1914



Photograph by Paul Thompson, N. Y.

FRANCIS JOSEPH
EMPEROR OF AUSTRIA-HUNGARY



Photograph by Paul Thompson, N. Y.

AUSTRIAN CROWN PRINCE FRANCIS JOSEPH INSPECTING THE FORTRESS AT PRZEMYSL WITH ITS DEFENDER FIELD MARSHAL HERMAN VON KUSMANEK

AUSTRIA-HUNGARY

tion of Galicia to Russia; but the four prisoners were acquitted and set at liberty in June.

SARAJEVO AND THE WAR. The assassination of the heir to the throne, Archduke Francis Ferdinand, at Sarajevo on June 28, 1914, by a Bosnian student Prinzip; the allegation of Servian complicity in the crime; the ultimatum to Servia, and the resulting world-wide war are treated in full in the article on the WAR OF THE NATIONS. Since Francis Ferdinand in marrying the Duchess of Hohenburg had renounced the right of his children to succeed to the Hapsburg throne, Archduke Charles Francis Joseph, nephew to Francis Ferdinand, and great-nephew to the Emperor, became the new heir to the throne. The father of Charles Francis Joseph was Otto, the younger brother of Francis Ferdinand, and the nephew of Francis Joseph. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

AUTOMOBILES. The estimated production of automobiles in 1914 in the United States is 500,000 cars. There were at the beginning of the year approximately 1,400,000 cars in use, bringing the total number at the end of the year up to very nearly 2,000,000. The most characteristic feature of 1914 was the continued increased production of low priced cars. At the beginning of 1914 the cheapest six-cylinder car was $1500; at the beginning of 1915 it was $750. Other features for 1914 were eight-cylinder motors, high stroke-bore ratios, spiral-bevel drive, vacuum-feed, cantilever springs, lower weights, and smaller tire and maintenance expense. The car of average price at the end of the year was $2005, this being the lowest at any time in the history of the industry. In spite of this fact the 1914 car was more comfortable, easier riding, and had more to offer in the way of comforts for its passengers than any previous car. Great improvements were made in the appearance of car bodies; the clean molded lines have developed during the year, side lamps being largely eliminated, battery boxes taken from the running boards, and electric starting and lighting being used on cars costing as low as $600.

The number of automobile manufacturers was less at the end than at the beginning of the year, as in December, 1914, there were 119 manufacturers, against 133 in January, 1914. The number has steadily decreased since 1911, when there were 270. Among makers of expensive cars the falling off in numbers was greater than in any other year, but in spite of this the percentage of six-cylinder cars increased. There was a falling off in the exports of automobiles in 1914, as compared with 1913, due to the conditions in Europe on account of the war. There were exported in the eleven months of 1914, 21,038 passenger cars, valued at $18,523,010, compared with 23,579, valued at $23,291,160 in 1913. The export of commercial cars, however, showed a large increase in 1914. For eleven months of the latter year 2151 cars of this class were exported, compared with 921 for the corresponding period in 1913. The total value of the cars exported in 1914 was $5,598,027, compared with a value of $1,586,147 in 1913.

RACING EVENTS. Automobiling as a sport made little progress in 1914, but plans were laid for the building of speedways in various parts of the country and the year 1915 should witness a considerable increase in the number of racing events. The best showing of 1914, so far as speed is concerned, was made by Eddie Pullen who drove a Mercer 300 miles at an average rate of 87¾ miles an hour. The Vanderbilt Cup and Grand Prize races were both held in California. Ralph De Palma won the Vanderbilt in a Mercedes, while Cullen captured the Grand Prize. De Palma's average was 75⅓ miles an hour and Cullen's 77½ miles. De Palma also was a victor in the Cobe and National trophy events held at Elgin, Ill., and the 25-mile race at Brighton Beach.'

The annual 500-mile race on the Indianapolis Motor Speedway was won by Rene Thomas, a European driver in a Delage car, never before seen in the United States. The outcome of the race showed that Europe is still in the van when it comes to building speed machines. Thomas's average was 82½ miles an hour, a new record for the circuit. The Mercedes, a German car, carried off the laurels in the French Grand Prix by capturing first, second, and third places.

AUXETICS. See CANCER.

AVIATION. See MILITARY PROGRESS.

BACON, AUGUSTUS OCTAVIUS. United States Senator from Georgia, died Feb. 14, 1914. He was born in Bryan Co., Ga., in 1839, and graduated from the University of Georgia in 1859. In 1861 he entered the Confederate army as adjutant for a Georgian regiment, and later served as a captain on staff duty. He took part in the campaigns of northern Virginia. After the war he practiced law at Macon, Ga., became interested in politics, and served as a delegate to the State national conventions and as a presidential elector. From 1872 to 1882 and in 1892 and 1893 he was a member of the State House of Representatives, and he was several times candidate for the nomination of Governor of the State but each time defeated. Elected to the United States Senate in 1894, and reëlected in 1900, 1907, and 1913, Senator Bacon became one of the leaders in that body, serving with distinction on the judiciary committee and being for many years the ranking Democrat on the foreign relations committee, of which he was chairman in the Sixty-second and Sixty-third Congresses. He was conservative, and had little in common with the modern radical tendencies of the Democratic party. Although opposed to the plan of direct election of Senators by the people, he was the first Senator to be chosen by that method. When the Secretary of State proclaimed the ratification of the Seventeenth Amendment providing for direct election, Senator Bacon had already been renominated by his party at a primary election as his own successor. and was waiting for a meeting of the legislature to ratify this choice. As soon as the constitutional amendment was proclaimed, the question arose as to whether or not Senator Bacon was entitled to accept his commission from the legislature, that body already having been chosen by the people. He was unwilling to have the title to his seat clouded in any way, and he immediately made preparations for submitting his candidacy to the test of a popular vote. He was reëlected without opposition for the term ending March 3, 1919. His last conspicuous public service was in connection with the Mexican crisis. As chairman of the Foreign Relations Committee he gave President Wilson his most loyal support.

BACON, JOHN. An English artist, died Jan.

24, 1914. He was born in 1865, and early showed unusual talent in drawing and modeling. He studied at the Royal Academy schools and won many distinctions. His subsequent work was of a varied kind, including much book illustration, black and white, and water-color drawing. In 1903 he was elected an associate of the Royal Academy. His work in the later years of his life dealt almost entirely with portrait painting, and his excellence in this department led to his selection to paint the picture of the Coronation of King George.

BAER, George Frederick. An American lawyer, railway official, and capitalist, died April 26, 1914. He was born near the village of Lavansville, Somerset Co., Pa., in 1842, was educated in the common schools, and at the age of 13 became an apprentice in a newspaper office where he worked for two years. He studied at night and was able to enter Franklin and Marshall College. After leaving this institution he with his brother Henry acquired control of the Somerset *Herald* in 1861. In 1862 he organized the 133d Pennsylvania Volunteers. He served in Humphrey's division of the Army of the Potomac, participating in the second battle of Bull Run, Antietam, Fredericksburg, and Chancellorsville. He was then detailed as adjutant-general of the Second Brigade. He was one of the youngest officers in the Union army and was the youngest to receive the rank of major, with which he retired from service in 1864. He then resumed the study of law and in the same year was admitted to the bar. After remaining in Somerset for four years he removed to Reading where within a few years he became one of the leading lawyers. After winning several cases for the Reading Company, he became an attorney for that road in 1870. His association with this company continued until his death. He attracted the attention of the high officials of the railroad by his ability to master details of railroad organization and to develop a policy that worked with success. He became a director of the Philadelphia and Reading Railroad Company, but disagreement with the policy of the president caused him to resign. His ability to accomplish important matters attracted the attention of J. Pierpont Morgan, who wished to secure the entry for one of his railroads into Pittsburgh. He entrusted this to Mr. Baer, who accomplished it. For many years after this he was the confidential representative of Mr. Morgan in Pennsylvania. When the Morgan interests assumed control of the Philadelphia and Reading Railroad with the idea of reorganizing it, Mr. Baer had charge of the work, and in 1901 was made president of the Reading Company, the Philadelpnia and Reading Railroad Company, and the Reading Coal and Iron Company. He was also made a director of the Lehigh Valley Railroad. Under his management the Reading Railroad became exceedingly prosperous. Mr. Baer came into public notice in 1902, when workers in the anthracite coal region struck for higher wages and recognition of the union. Mr. Baer had charge of the negotiations on the part of the employers and the demands of the laborers were refused. In the strike which followed, more than 145,000 miners were out of work and the situation became so serious that President Roosevelt interfered, with the final result that the question between the miners and operators was referred to a Commission. Before that time Mr. Baer had announced that the coal operators would never recede from their position.

BAHAMAS. A group of about twenty inhabited islands and many uninhabited isles and islets, constituting a British colony, southeast of Florida. The total area is 4403½ square miles; pop., 55,944 (1911). The capital is Nassau, on New Providence. New Providence has 13,554 inhabitants. The principal industries are sisal cultivation (20,000 acres in 1912), canning, fishing, and sponge fishing. The trade is mainly with the United States. Imports and exports for the calendar year 1912 were valued at £358,111 and £276,115, respectively (£311,095 and £209,251 in 1911). Shipping entered and cleared in 1912–13, 1,247,844 tons, of which 127,558 tons British (1,739,957 tons in 1911–12, of which 149,415 tons British). The revenue and expenditure for 1912–13 were returned at £97,574 and £88,077, respectively (£85,592 and £82,076 in 1911–12). A wireless station has been installed at Nassau, whence also a cable communicates with Florida. There are no railways. The Governor (G. B. Haddon-Smith in 1914) is aided by an executive council not exceeding nine members.

BAILEY, William Whitman. An American botanist and educator, died Feb. 20, 1914. He was born at West Point, N. Y., in 1843, and entered Brown University in 1860, but left college in 1862 to become a private in the Tenth Rhode Island Volunteers. After serving until 1864 he returned and graduated in that year. He took post-graduate courses there and also at Columbia and Harvard Universities, where he studied botany. In 1867 and 1868 he acted as botanist of the United States Geological Survey of the fortieth parallel. In the latter year he served as deputy Secretary of State of Rhode Island, and from 1869 to 1871 was assistant librarian at the Providence Athenæum. After teaching botany in private schools at Providence he was appointed instructor in botany at Brown University in 1877. In 1881 he was appointed full professor and served in that chair until 1906, when he became professor emeritus and retired as special beneficiary of the Carnegie Foundation. He received the degree of LL.D. from the University of New Brunswick. Among his published writings are: *Botanical Collector's Handbook* (1881); *Among Rhode Island Wild Flowers* (1897); *Botanizing* (1899). He also published a volume of *Poems* in 1910 and contributed many articles to journals and magazines. He was a member of several botanical and patriotic societies.

BALBOA DOCK. See Docks.

BALKAN STATES. See Albania; Bulgaria; Greece; Montenegro; Rumania; Servia; and Turkey.

BALLOONS. See Aëronautics.

BALTIC-BLACK SEA CANAL. See Canals.

BANDELIER, Adolph Francis Alphonse. An American archæologist and historian, died March 19, 1914. He was born in Berne, Switzerland, in 1840, and removed to the United States while still a youth. He had no schooling after his eighth year. After failing in several kinds of business he found his life work in archæology. In 1880 the Archæological Institute of America sent him to examine the ruins of the ancient Pueblos and to study native races of New

Mexico, Arizona, Mexico, and Central America. In Zuñi, with Mr. Frank Cushing, he made important discoveries. Starting in Mexico, Bandelier followed the path taken by Coronado in his expedition to what is now our Southwestern States and established the fact that the fabled Seven Cities of Cibola were merely villages whose riches had been greatly exaggerated in reports of the early Spanish explorers. From 1885 to 1892 he lived in Santa Fé, N. Mex., and for three years in that period was in charge of documentary studies for the Hemenway Archæological Expedition. In 1892 he transferred his researches to Ecuador, Bolivia, and Peru, heading an expedition sent to these countries by Henry Villard, and in these journeys gathered great collections of antiquities for the American Museum of Natural History. Bandelier demonstrated the falsity of various historical myths, notably those concerning the Inca civilization of Peru. He also investigated the story of El Dorado, and found that it originated in the district about Lake Guatavita, in Colombia, where dwelt a tribe of Indians who whenever a new chief was chosen were accustomed to gild him and throw him into a lake. He was called El Dorado—the gilt man. In 1904 Bandelier was appointed lecturer on Spanish-American literature in its connection with ethnology and archæology at Columbia University, and he held this post until his death. He was the author of many works on archæological subjects and one novel. Among his most important works are: *The Art of War and Mode of Warfare* (1877); *A Report on the Ruins of the Pueblo of Pecos; Final Report of Investigations among the Indians of the Southwestern United States* (1880–85, part I 1890, part II 1892); *The Delight Makers*, a novel; *The Gilded Man; An Outline of the Documentary History of the Zuñi Tribe; The Islands of Titicaca and Koati* (1910). He also edited *The Journey of Alva Núñez Cabeza de Vaca from Florida to the Pacific.*

BANGS, LEMUEL BOLTON. An American physician, died Oct. 14, 1914. He was born in New York City, and graduated at the College of Physicians and Surgeons in 1872; was successively professor of genito-urinary diseases in the New York Post-Graduate Medical School and Hospital; genito-urinary surgeon in St. Mark's Hospital, New York; professor of genito-urinary surgery in the University and Bellevue Hospital Medical School (1898–1901). He was also consulting surgeon for various New York and Brooklyn hospitals and attending surgeon at the Bellevue Hospital. In 1895 he was President of the American Association of Genito-Urinary Surgeons. He wrote an *American Text-Book of Genito-Urinary Diseases* (1898).

BANKS AND BANKING. BANKING RESOURCES. The report of the Comptroller of the Currency showed that on June 30, 1914, there were 7525 national, 14,512 state, 634 mutual savings, 1466 stock savings, 1064 private banks, and 1564 loan and trust companies. The total resources of all of these reporting banks aggregated $26,971,398,000. This was an increase for the year of $1,259,000,000; and of 28 per cent as compared with 1909. The total loans and discounts were $15,288,375,000; investments in stocks, bonds, and treasury warrants, $5,584,924,000; cash on hand, $1,639,219,000. The great item among liabilities was individual deposits amounting to $18,517,732,000. Of this slightly more than one-half was subject to check without notice; and slightly more than one-third constituted savings deposits. The enormous increase of deposits is shown by the fact that ten years earlier, in 1904, they were $10,000,500,000, and in five years they had grown by $4,500,000,000. Of the deposits national banks held one-third, and savings banks 27 per cent. Of the loans and discounts national banks were credited with 41 per cent; state banks with 19 per cent; loan and trust companies with 19 per cent; mutual savings banks with 14 per cent; and stock savings banks with 5.5 per cent. The distribution of the total resources of the various classes of banks was in very nearly the same proportions, showing the overwhelming preponderance of the national banks in the financial system of the United States. See PRIVATE BANKS.

FEDERAL RESERVE SYSTEM. After several years of public discussion and after several months of most thorough analysis in Congress the Owen-Glass bill, greatly modified by suggestions of bankers, business men and public leaders from all parts of the country, had been passed on Dec. 23, 1913. This comprised a most comprehensive reorganization of the banking and currency systems of the United States. The first step in carrying out the provisions of the new law was entrusted to an Organization Committee, of which Secretary of the Treasury McAdoo was chairman. This committee held hearings in January and February in New York, Boston, Washington, and a dozen other important cities. The task of dividing the country into districts centring about principal cities was a delicate one, inasmuch as each city was naturally jealous of contiguous territory. Meanwhile a formal letter was sent to the banks, including a copy of the act, and requesting decision as to membership. As early as January 15, fully 1500 banks had signified their intention of joining the new system. Nearly all of these were national banks and most of the large banks of the country were included. The hearings, completed in February, brought out numerous difficulties to be met in establishing a workable system of rediscounts, and in affecting clearings between different sections; at the same time they clarified banking and public opinion as to the main features of the plan proposed.

On April 3 the committee announced the outlines of the reserve districts that had been determined upon. It had been decided to divide the country into 12 districts, the maximum number permitted by the law. The principles which had guided the committee in determining boundaries were: the ability of the banks of each district to provide the minimum capital of $4,000,000 required for a Federal reserve bank, this sum to be 6 per cent of the capital stock and surplus of member banks; the mercantile, industrial, and financial connections existing in each district; a fair and equitable division of the available banking capital of the country among the various districts; geographical conditions, transportation, and communication facilities; population, area, and existing business activities of the district. Many bankers and business men had favored the creation of the minimum number of districts; many moreover had favored a large bank of extraordinary size, having not less than $25,000,000 capital as a sort of controlling institution in foreign exchanges; but neither of these ideas was carried out.

The following cities were chosen as the reserve cities: Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas, and San Francisco. The districts were numbered in the above order from 1 to 12. The areas of the districts varied from 39,865 square miles for Philadelphia, and 49,170 for New York, to 693,658 square miles for St. Louis. Minneapolis, Kansas City, and Dallas also have very large areas. The population of the districts ranged from 5,310,000 for Dallas, to 12,630,000 for Chicago. The 6 per cent subscription which would constitute the capital of the new reserve institutions varied from slightly above the $4,000,000 minimum for Atlanta, to more than $20,000,000 for New York City. The next step in the organization was the soliciting of subscriptions and the division of the subscribing banks of each district into three groups for voting purposes. These groups were determined by the amount of capital and surplus. Thus in district Number 1, voting group Number 1 included 148 banks having each an aggregate capital and surplus of $250,000 or more; group Number 2, 148 banks with less than $250,000, but more than $120,000; and group Number 3 also included 148 banks with $120,000 or less.

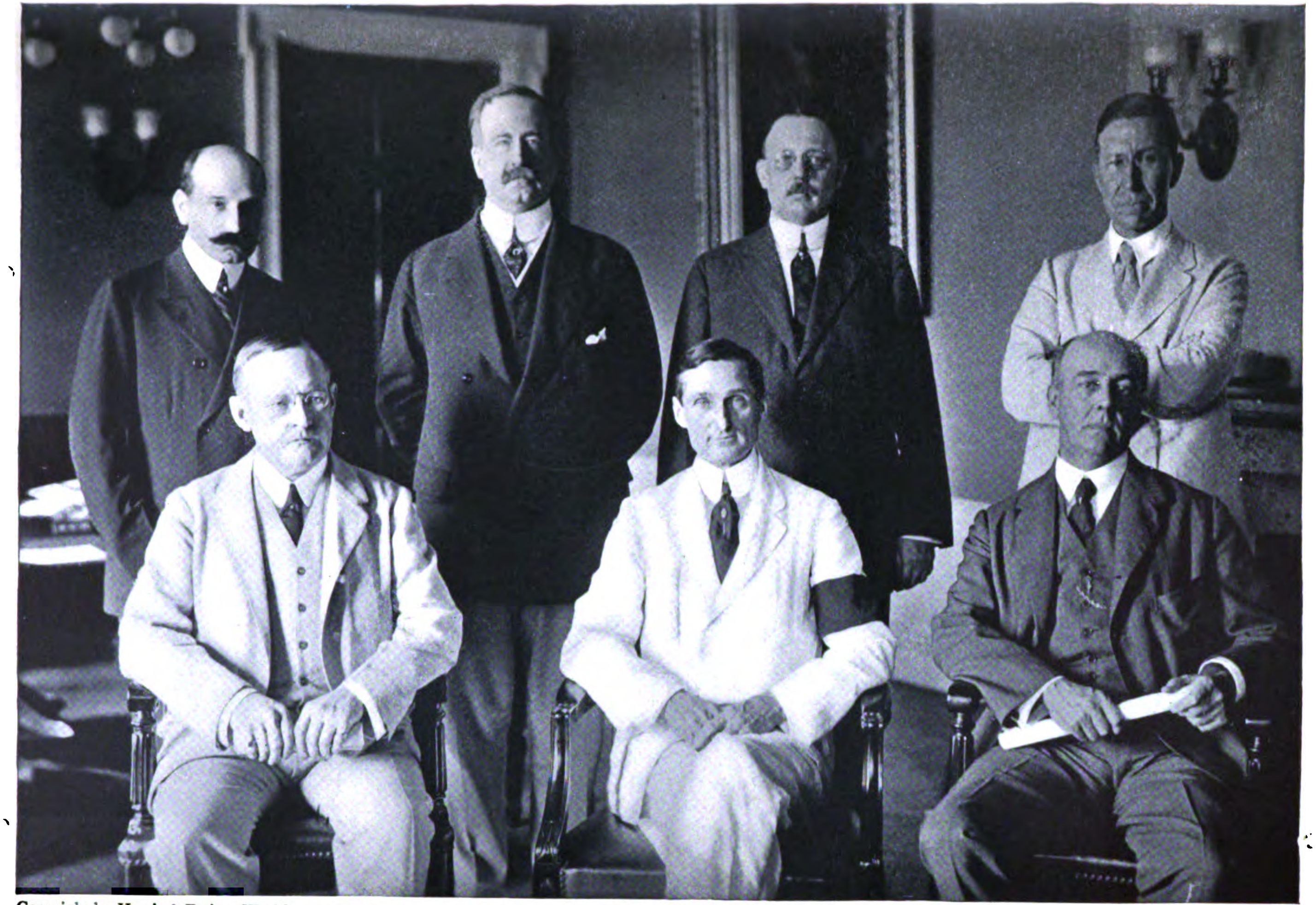
The actual organization of the twelve reserve banks involved next the choosing of directors. There are nine directors for each reserve bank, six chosen by member banks in two groups (Class A and Class B) of three each, and three appointed by the Federal Reserve Board. The members of this latter board by law included Secretary of the Treasury William G. McAdoo, Comptroller of the Currency John Skelton Williams, and five others to be appointed by the President. The President completed this list as follows: Charles S. Hamlin of Boston, F. A. Delano of Chicago, Paul M. Warburg of New York, W. P. G. Harding of Birmingham, and A. C. Miller of San Francisco. On June 2 and 3 the manner of holding elections for directors was sent to the individual banks. These instructions indicated that each bank should elect by ballot the district reserve elector, and in addition nominate a candidate for a Class A, and a candidate for a Class B director. Class A directors represented banks, and Class B directors represented agricultural, commercial, and industrial interests. The result of the selections showed that in the majority of cases directors chosen represented the larger banks and larger commercial and industrial interests, and that few direct representatives of the smaller banks and corporations were included.

On August 12 the Federal Reserve Board was formally organized. Its first work was the formulating of proposed amendments to the Federal Reserve Act. These proposals, however, did not meet with Congressional favor. Its second activity was to complete the directorates of the twelve district reserve banks by naming the three Class C directors for each. One of these in each case was to constitute the Federal Reserve Agent in each district, and one was to be the Deputy Federal Reserve Agent. On October 20–22 a conference of the directors of the Federal Reserve Banks was held in Washington at which were present three-fourths of all directors. The conference determined upon November 30 as the date before which each Federal Reserve Bank should be in working order. On December 15 was organized at Washington the Advisory Council of the Federal Reserve Banking System, a body composed of bankers and business men from the various districts. This council will work in conjunction with the Federal Reserve Board in the determination of policies. At this first session reports from all parts of the country showed credit conditions good, reserves abundant, and short term money cheap. The Reserve Board presented questions relating to time deposits, acceptances, and state banks.

Statement of December 18. According to the summary of conditions of the twelve Federal Reserve Banks on December 18, they held gold coin and bullion to the amount of $233,279,000, and other legal tender to the amount of $23,008,000. Their total discounts equaled only $9,043,000. Capital paid in amounted to $18,050,000; reserve deposits, $248,084,000; and Federal reserve notes in circulation, $3,856,000.

HOARDING BY BANKS. On September 25 Secretary McAdoo caused a considerable sensation by accusing banks of withholding credit and charging exorbitant rates of interest. He published a list of 247 national banks, comprising nearly every part of the country, which he believed were not extending legitimate credit as shown by their having more than 25 per cent reserves. He stated also that State banks and trust companies were likewise guilty. He showed that 7 per cent and 8 per cent were being charged for loans and declared that the funds tied up by excess reserves were sorely needed to ease the credit market. On the other hand, it was claimed that the national banking act and the existing inability to dispose of liquid securities forced the individual banks in self-defense to the tactics they had pursued. The Secretary's letter, however, directed attention to the situation and brought about a considerable betterment of the situation. In an address in New York on December 3, Mr. C. S. Hamlin, Governor of the Federal Reserve Board, expressed the view that under the new reserve system banks would no longer need to engage in a struggle for self-preservation, that hoarding in times of a tight money market was a thing of the past.

BANKING COÖPERATION. The extraordinary financial situation created by the war resulted in several remarkable manifestations of coöperation among the bankers. One of the several weaknesses of the American banking system has been the lack of a basis for concentration of reserves and concerted action at critical times. The Federal Reserve Act was designed to remove this excessive individualism from the entire system. Previously in every time of stress each bank sought to protect itself by increasing its gold holdings and restricting its loans. Thus credit disappeared at the time when most needed. The war crisis threatened a similar catastrophe before the new Federal Reserve banks were in operation. Collapse was, however, largely forestalled by the New York City banks in August combining to create a fund of $100,000,000, more than four-fifths of which was to meet immediate obligations of New York City held by foreign investors. Then in September and October, under the lead of the Federal Reserve Board and a committee of clearing-house delegates, a *Gold Pool* of $100,000,000 was created by the contribution of banks in reserve cities in proportion to their gold holdings. This fund was to be



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THE FEDERAL RESERVE BOARD, 1914

SEATED, LEFT TO RIGHT: C. S. HAMLIN, WILLIAM G. McADOO, FREDERIC A. DELANO
STANDING, LEFT TO RIGHT: PAUL WARBURG, JOHN SKELTON WILLIAMS, W. P. HARDING, ADOLPH C. MILLER

used for export if necessary, and otherwise to guarantee that American obligations held abroad should be met at maturity. This action was due to the most unusual pressure of American obligations due abroad. Several hundred million dollars of short-term loans were to mature during the closing months of the year. In normal times these could have been renewed or met by the fall exports, especially of cotton. While, however, exports in some lines, and notably of wheat, increased, those of cotton were for several months greatly impeded. American bankers were therefore confronted with the necessity of insuring themselves against the complete collapse of foreign exchange or protecting themselves behind an unofficial moratorium. By October 15 the subscriptions to the fund aggregated $105,000,000. Quantities of this gold were shipped to Ottawa, Canada, to a branch of the Bank of England, and served as a basis for sterling exchange on London.

Another important instance of coöperation was the formation of a fund known as the *Cotton Loan Pool*, for the relief of the southern farmers whose market had been destroyed by the war. The cotton crop was somewhat larger than in recent years, being estimated at at least 15,000,000 bales, representing a minimum normal value of $750,000,000. Cotton exchanges being closed all over the world, and cotton mills generally either closed or running at small capacity, and southern banks having already made rather extensive loans against cotton, southern planters were in danger of great financial distress unless facilities were created whereby their cotton could serve as a basis for credit. The crucial situation of many planters was aggravated by the custom of planting, cultivating, and harvesting cotton on the basis of credit extended by local merchants. In August the cotton growers proposed to the government that it give them relief either by a valorization scheme such as the Brazilian coffee valorization plan, or by loans made on cotton. Secretary McAdoo at once rejected the former plan and showed unwillingness to undertake a direct government loan. Schemes to secure funds for cotton loans by the issue of bonds or Treasury notes were not accepted. Following a conference on August 24–25 of bankers, brokers, and growers, Secretary McAdoo announced that he would permit banks to present warehouse cotton certificates as a basis for the issue of emergency currency. The demand of tobacco growers and producers of naval stores that their products be similarly favored was granted; thus a unique use was made of the Aldrich-Vreeland Act. But more extensive banking resources were needed to carry the cotton crop. Finally a scheme originated by bankers and other private persons took the form of a proposal to raise $135,000,000 in the form of pledges from banks, corporations, and individuals to supply funds for cotton loans; these pledges were deposited with the members of the Federal Reserve Board acting as individuals. There were two forms of subscriptions. The Class A certificates represented individuals and institutions outside the cotton growing States, and Class B certificates, subscriptions from banks within the cotton States who already had made loans on cotton, or wished to do so. The subscribing of $100,000,000 of the Class A certificates was completed on November 17. New York City banks had subscribed $53,000,000 of the total $100,292,000; Chicago, $13,000,000; St. Louis, $11,500,000; Philadelphia, $4,640,000; Kansas City, Cleveland, Cincinnati, Boston, Baltimore, and Pittsburgh had each subscribed $2,000,000 or more, and Washington, Louisville, Detroit, and San Francisco smaller sums.

The final plan for the working of the pool dated November 30 provided for loans on middling cotton at the rate of 5 cents per pound. These loans were to be made direct to growers through southern banks. These latter were to furnish one-fourth of the total loan, and the banks subscribing to Class A certificates the remaining three-fourths. The $100,000,000 pool would thus make possible total loans of $133,333,000. All applications for loans must be made before Feb. 1, 1915, and all expire one year later; they may be repaid on 30 days' notice. Loans were to bear 6 per cent interest, and no commission was given the southern banks negotiating the loans. In repayment preference was to be given to the holders of Class A certificates. It was not expected that the entire fund would be needed, as the opening of the cotton exchanges and the development of the export trade had materially altered the situation after the pool plan had been launched. See for other details FINANCIAL REVIEW.

THE INDUSTRIAL FINANCE CORPORATION was organized early in 1914 to bring banking facilities in reach of many for whom previously lacking. Its president is Dr. E. R. L. Gould, and its directors include various bankers, prominent educators, and business men of New York and Chicago. The object is to aid in the formation of loan and savings banks on the "Morris Plan." This plan was begun at Norfolk, Va., by Arthur J. Morris after a study of the Schulze-Delitzsch and Raiffeissen banks of Germany. The plan facilitates loans for legitimate purposes to persons of small means by providing for loans based on the security of promissory notes signed by the borrower and two friends. Such a note replaces the ordinary chattel mortgage and will also, it is expected, make heavy inroads into the salary loan business. The motto of the new corporation is J. P. Morgan's statement, "Character is the basis of credit." Following the initial success of Mr. Morris, banks were opened in 1912 at Atlanta, Baltimore, Washington, Memphis, and Richmond. In 1913 and 1914 banks were opened in St. Louis, Denver, Philadelphia, Springfield, Mass., Columbia, Charleston, Lynchburg, Portsmouth, Durham, and Nashville. Experience thus far has shown that losses are very small in comparison to the services rendered. The undertaking is in nowise charitable, but might be classed as a self-sustaining and moderately paying philanthropy.

GUARANTEE OF DEPOSITS. In 1908 Oklahoma passed a law whereby a fund was created to guarantee deposits in State banks. This lead was followed the next year by Kansas and Texas, and in 1911 by Nebraska. In all of these States the general principle was a compulsory contribution by State banks to a guaranty fund controlled by the State. Up to 1914 there had been three failures in Kansas which had cost the fund about $30,000, yet the fund held early in 1914 cash to the amount of $111,000, and bonds valued at $366,000. There had been three failures in Texas which had cost the fund $100,000, but there remained nearly $1,000,000. Up to 1914, in Nebraska there had been no failures, and the fund amounted to more than $810,000.

In Oklahoma, on the other hand, there had been 25 failures which were explained by the greater amount of speculation in that State, inadequate banking supervision, and pernicious political interference. The banks during these years had paid more than $2,000,000 in assessments to the guaranty fund; nevertheless, about $800,000 was needed in the early months of the year to meet depositors' guaranty-fund warrants. These latter are issued when cash is lacking. The fund held assets having a face value of $2,500,000, but actual cash value of not 20 per cent as much. In spite of this special tax, Oklahoma banks had earned more than 15 per cent net on capital in recent years. The general cause of Oklahoma's unfavorable experience was believed to be its weak and inadequate banking law. The guarantee idea being only an application of the insurance principle to banking and bank deposits, it should succeed wherever banking itself is sound. State officials had determined to clear up the financial condition of the guaranty fund if possible by levying two annual assessments of one-fifth of one per cent of the average deposits on all State banks during 1914, 1915, and 1916. The object was to create for the fund assets equal to 2 per cent of the average aggregate deposits of State banks.

In Wisconsin the guarantee idea was defeated by the bankers in the State Legislature in 1914 after an active campaign, on the ground that the bankers would not have control of the guaranty fund. To satisfy the demand for some kind of deposit insurance, bankers formed a mutual company to guarantee the deposits of such banks as cared to join.

NEW YORK LAW. The Van Tuyl Commission authorized by the New York Legislature in 1913 reported Feb. 1, 1914. It held numerous sessions under the chairmanship of Mr. A. Barton Hepburn, and conducted an investigation into every phase of the banking interests of New York State. On the basis of its recommendations the Legislature passed a law in March designed to enable the State banks to compete more successfully with the National banks under the new Federal Reserve system. The most important change in the State laws dealt with the reserve requirements, these being generally reduced. The new law requires that State banks of Manhattan Borough, New York City, must keep reserves of 18 per cent of their deposits; of this 12 per cent must be on hand, and 6 per cent may be on deposit with authorized reserve agents. Trust companies of Manhattan Borough must keep a 15 per cent reserve; of this 10 per cent must be on hand, and 5 per cent may be on deposit. In any borough of one million to two million inhabitants, State banks must have a reserve of 15 per cent; of this 10 per cent must be on hand, and 5 per cent may be on deposit. Trust companies in such a borough must have a reserve of 13 per cent; of this 8 per cent must be on hand, and 5 per cent may be on deposit. State banks elsewhere must keep a reserve of 12 per cent; of this 4 per cent must be on hand, and 8 per cent on deposit. Trust companies elsewhere must keep a reserve of 10 per cent; of this 4 per cent must be on hand, and 6 per cent may be on deposit; but in cities of less than one hundred thousand inhabitants, trust companies need keep only 3 per cent on hand. One-half of the legal reserve under the new law must be in gold,—bullion, coin, or certificates,—or in United States notes; and the remainder in lawful money. The State Superintendent of Banking is authorized to designate reserve institutions under conditions prescribed in the law; but any bank which is a member of a Federal Reserve Association may keep its reserves in a Federal Reserve Bank.

This law is expected to accomplish a great expansion of credit. This will result primarily from the permission to the State institutions to deal in drafts based on acceptances of commercial paper. In Manhattan Borough, banks may accept drafts of one individual firm or corporation up to 25 per cent of the bank's capital and surplus; elsewhere such drafts may be accepted up to 40 per cent of the bank's capital and surplus. These drafts must be drawn in good faith against real values. One object is to develop in New York an acceptance and discount market similar to that in London. Since the aggregate capital and surplus of New York State banks and trust companies amounts to $340,000,000, and since each institution may accept bills up to 25 per cent or even 40 per cent of its capital and surplus from each of the firms arranging for such credit, it is evident that an enormous amount of business of this sort is rendered possible.

Thus the new law is expected to maintain the competitive power of the State banks who remain outside of the Federal Reserve system, and to develop a rivalry between State bank acceptances and Federal Reserve re-discounts.

The new law also authorized the formation of land banks with power to issue debenture bonds against guaranteed real estate mortgages. Finally, private and unincorporated banks were drasticly dealt with.

GREAT BRITAIN. *Banking Consolidation.* The most striking feature of the British banking evolution in the past few years has been the manifest tendency toward amalgamation. This has affected not only banks of the first grade, but also the lesser and weaker ones. In April, 1914, Lloyd's Bank had absorbed Wilts and Dorset Bank with nearly $60,000,000 deposits. This gave Lloyd's the vast sum of one-half billion dollars of deposits, and the primacy among English banks with respect to deposits. Shortly thereafter the London City and Midland Bank absorbed the Metropolitan Bank of England and Wales with 156 branches and $58,000,000 deposits. This restored the London City and Midland Bank to first place with about 1000 branches, and more than one-half billion deposits. This rivalry of the two largest institutions suggested to some merchants and bankers a dangerous struggle for mere leadership in size. On the other hand, it suggested to others a dangerous tendency toward monopoly. This latter feeling called forth a protest to which the management of the leading institution declared that monopoly of banking facilities is impossible; that amalgamation intensifies competition, and at the same time increases stability. It was pointed out that amalgamation must soon reach its limit because of lack of new banks to amalgamate. Moreover consolidation was held to be an advantage in the control of gold reserves, and the avoidance of banking and commercial crises. The charge that consolidation leads to the destruction of the personal relationships of merchants and customers was denied, since the management of local banks was as a rule not disturbed by the amalgamation. Nevertheless, merchants protested that these enormous institutions are managed by general rules which tend to crush out individuality and character. Thus immediately following legislation in the United States designed to check concentration, a certain alarm manifested itself in England over the tendency to excessive combination.

Other matter of interest in connection with the study of banking conditions will be found under the following articles: NATIONAL BANKS; STATE BANKS; SAVINGS BANKS; POSTAL SAVINGS BANKS; LOAN AND TRUST COMPANIES; AGRICULTURAL CREDIT; MONEY; and FINANCIAL REVIEW.

Bibliography. Among the books of the year were the following: L. D. Brandeis, *Other People's Money and How the Banks Use It;* A. Desjardins, *Coöperative People's Banks;* G. W. Dowrie, *Development of Banking in Illinois, 1817–1863;* Irving Fisher, *Why Is the Dollar Shrinking?;* J. T. Holdsworth, *Money, Credit, and Banking;* H. Bilgram and L. E. Levy, *Cause of Business Depressions;* J. J. Maclaren, *Banks and Banking (Canada);* W. P. Wei, *Currency Problems In China;* H. Withers, *Meaning of Money.*

BAPTISTS. The total number of Baptists in the United States in 1914, according to the statistics of the *American Baptist Year Book* for that year, was 5,799,253, compared with 5,529,573 in 1913. The total number in the world is given by the same authority as 6,847,286, compared with 6,516,483 in 1913. The denomination in the United States is divided into two main, and a number of smaller subdivisions. The two main branches are known as the regular Baptists, and include the Northern and Southern branches. The Northern Baptists had in 1914, 1,291,668 communicants, 9534 churches, and 8250 ministers. The Southern Baptists had 2,522,623 communicants, 24,288 churches, and 14,909 ministers. The larger of the smaller subdivisions are the Primitive Baptists, with about 100,000 communicants; the Free Baptists (see below); the Free Will Baptists, with 57,231 communicants; and the General Baptists, with about 33,600. The denomination has a large colored membership in the South. There were in 1913, 1,934,952 communicants in the regular colored Baptist denomination. There are in addition several smaller subdivisions of the colored Baptists. The general work of the larger denominations is in the hands of the Northern Baptists' convention, and the Southern Baptists' convention. The meeting of the Northern Baptists' convention was held at Boston on June 19. Resolutions were passed favoring the disarmament and compulsory arbitration, and opposing the liquor traffic and sectarianism in State affairs. Cigarette smoking was forbidden the members of the Church. John D. Rockefeller gave $50,000 with a promise of an additional sum to pay off the debts of the denomination. The Southern Baptists' convention also met in June. The missionary work of the denomination is conducted by the American Baptist Foreign Missionary Society. Missions are maintained in practically all quarters of the globe. For foreign missions there was contributed in 1914, $1,206,202. Home and State missions are also conducted on a large scale. Nearly $1,000,000 was contributed for each of these purposes in 1914. The total contributions for all purposes in 1914 amounted to $27,549,711. The denomination maintains 12 theological seminaries, and has under its auspices 95 colleges and universities. For an account of the movement which has been in progress for several years to bring about a union between the Baptists and Free Baptists, see the following article on BAPTISTS, FREE.

BAPTISTS, FREE. This denomination originated in 1780 in New Durham, N. H., under the preaching of Benjamin Randall, who was disfellowshipped by the New Hampshire Baptist Association because of his preaching "Free Will" when Baptists believed and preached fore-ordination. Free Baptists spread rapidly through New Hampshire and the adjacent New England States, and thence into the middle western States. Because of their opposition to slavery, a large membership in the South, still numerous in North Carolina and parts of Tennessee, broke off from the General Conference of Free Baptists which was organized in 1827. Owing to changes which have taken place in all Baptist bodies, the differences between Baptists and Free Baptists had so far disappeared that in 1904 committees representing both bodies were appointed to plan for a restoration of fellowship and a union of forces. In October, 1911, this union was inaugurated by the transference on the part of the Free Baptists of their missionary and denominational activities to the three national missionary organizations of the Baptists, the American Baptist Foreign Mission Society, the American Baptist Home Mission Society, and the American Baptist Publication Society. This blending of denominational interests has proceeded harmoniously and is still in progress. At the same time union of State organizations has been practically accomplished in most of the States. In Maine and New Hampshire, where the numbers of the two bodies are more nearly equal, the designation "United Baptists" will probably be used. This designation has already been agreed upon in Maine. In 1914 the denomination had 65,440 members, 1110 churches, and 805 ministers. See also BAPTISTS; and RELIGIOUS DENOMINATIONS AND MOVEMENTS.

BAR ASSOCIATION, AMERICAN. The annual meeting of the association was held at Washington on October 20, 21, and 22. An address of welcome was delivered by President Wilson, and the annual address was delivered by Hon. William H. Taft, president of the association. Several notable addresses were delivered. Among these were the following: "The Layman's Criticism of the Lawyer," Hon. Elihu Root; "The Constitution of Canada," Sir Charles Fitzpatrick, Chief Justice of the Dominion of Canada; "The Argentine Constitutional Ideas," Hon. Romulo S. Naón, Ambassador of the Argentine Republic to the United States. Among the committees which rendered reports were the Special Committee to Suggest Remedies and Formulate Proposed Laws to Prevent Delay and Unnecessary Cost in Litigation; Committee on Commercial Law; Committee on International Law; Committee on Taxation; Special Committee on Legislative Drafting; Committee to Oppose the Judicial Recall; Committee on Insurance Law; Committee on Law Reporting and Digesting; and the Special Committee to Present Bills to Congress relating to Courts of

Admiralty. The officers in 1914 were as follows: William H. Taft, president; George Whitelock, secretary; Frederick E. Wadhams, treasurer.

BARBADOS. An island, the most easterly of the West Indian group, constituting a British colony; one of the Caribbee Islands. Area, 166 square miles; pop. (1911), 171,892 (135,939 in 1851). The capital and port is Bridgetown, with (1911) 16,648 inhabitants. There are 161 primary schools, with 26,276 enrolled pupils. The staple products are sugar and cotton; these, with molasses and rum, constitute the principal exports. About 64,000 acres are estimated to be under sugar; the sugar works in operation in 1911 were 330, producing 23,524 hogsheads of sugar, and 84,887 puncheons of molasses (in 1912, 28,732, and 85,663). The cotton industry is being revived, the export to the United Kingdom in 1912 being 415,887 pounds, of the estimated value of £26,191 (740,269 pounds, valued at £43,182 in 1911). The imports for 1912 were valued at £1,465,431 (£1,539,710 in 1911), and the exports at £1,085,569 (£1,005,931 in 1911). The chief imports are rice, salted meat and fish, grain, flour, and textiles. Total tonnage entered and cleared during 1912–13 was 3,346,982, of which 2,604,772 tons British (3,475,511 tons in 1911–12, of which 2,620,223 tons British). Revenue and expenditure for the year 1912–13 were £234,126 and £230,339, respectively; £221,906 and £215,697 in 1911–12. In 1885 Barbados was separated from the other Windward Islands, with a governor—Sir Leslie Probyn in 1913 (W. L. C. Phillips, acting).

BARGE CANALS. See CANALS.

BARLEY. The world's barley production in 1914 as indicated by crop estimates for most of the barley producing countries was lower than in 1913, and the reduction in yield was relatively greater than in the case of wheat and rye, which also gave smaller yields than in the preceding year. Although the production was reduced as compared with the year before, it was pointed out by the International Institute of Agriculture that it was perceptibly above the average yield for the ten years 1903–12. The estimates of production for countries in the Northern Hemisphere where practically all of the world's' barley is grown were as follows: European Russia, 476,200,000 bushels, including 8,900,000 bushels of winter barley; Japan, 102,700,000 bushels; Prussia, 81,500,000; Spain, 73,650,000; Hungary, 67,100,000; United Kingdom, 66,140,000; Roumania, 23,450,000; Denmark, 22,830,000; Bulgaria, 16,065,000; and Sweden, 13,050,000 bushels. Data for Austria, and for the countries of the German Empire, except Prussia, were not available. Italy, which produced about 11,000,000 bushels in 1913, yielded only 64 per cent of that quantity in 1914, and Algeria produced only a little over one-third the yield of the year before. Tunis produced only 3,200,000 bushels, or about one-half as much as in 1913. The average yield per acre in 1914 ranged from 50 bushels in Belgium, to 3.7 bushels in Tunis. As a rule the acre yield is low in southern Europe and northern Africa, as compared with northern Europe, the United States, Canada, and Japan. The Canadian crop of 1914, injured by dry weather in the western provinces, was estimated at 37,014,000 bushels, as compared with 48,319,000 bushels the preceding year. The average yield per acre for the two years was reported as 24.7, and 29.96 bushels, respectively. About half of the Canadian barley crop of 1914 was produced by the Province of Ontario. In the United States the hot and dry weather did less damage, as the crop was nearer maturity, than in the Canadian barley fields further north. As reported by the Department of Agriculture, the production in 1914 was 194,953,000 bushels on 7,565,000 acres, the average yield per acre being 25.8 bushels; and the value of the crop based on a bushel value of 54.3 cents, the average price received by farmers December 1, was $105,903,000, or about 10 per cent greater than the value of the preceding crop. The yield in 1913 was 178,189,000 bushels, and the area, 7,499,000 acres, the average yield being 23.8 bushels per acre. The leading barley States and their yields as reported by the *American Agriculturist* were as follows: California, 42,300,000; Minnesota, 30,797,000; North Dakota, 27,000,000; South Dakota, 22,225,000; Wisconsin, 19,600,000; and Iowa, 10,322,000 bushels. California, Minnesota, and North Dakota each devoted over 1,000,000 acres to the crop. The highest average yield per acre, 36 bushels, was reported for Washington, Montana ranking next with 35 bushels.

BARLOW, JOHN WHITNEY. An American soldier, died March 2, 1914. He was born in Perry, N. Y., in 1838, and received his early education in the public schools and in an academy in Wisconsin. In 1861 he graduated from the United States Military Academy and was appointed second lieutenant in the United States Artillery. In the following year he was transferred to the topographical engineers, and in 1863 to the engineering corps. In the same year he was appointed captain. He was brevetted captain on May 27, 1862, for "gallant and meritorious services in the battle of Hanover Court House, Va." He also received brevets of major for services in the Atlanta campaign, and of lieutenant-colonel for services before Nashville, Tenn. He took part in the Peninsular campaign and participated in battles at Yorktown and Williamsburg, and in the seven days' battle before Richmond. During the last months of the war he served with the engineering battalion of the Army of the Potomac. After the war he was superintendent of many engineering works. He also made explorations of the headwaters at the Yellowstone and Mississippi Rivers, was senior commissioner in marking the boundary between the United States and Mexico from 1892 to 1896, and served as division engineer in construction of fortifications in different parts of the country. He was a member of the board for fortifications in the United States, and member and president of the boards of engineers in connection with various surveys and engineering operations. In 1901 he was appointed brigadier-general and chief of engineers and retired in May of that year at his own request after 40 years of active service. He was a member of several patriotic societies.

BARNARD, COMMISSIONER, KATE. See FEMINISM.

BAROTSELAND. See RHODESIA.

BASEBALL. The year 1914 was a turbulent one in the baseball world. A new league, the Federal, was born, and bitter warfare was waged between the infant organization and "organized" baseball as represented by the National and American Leagues. Several of the most prominent stars of the game cast their fortunes with the new body, which established clubs in Chicago, Indianapolis, St. Louis, Kansas City, Pittsburgh, Buffalo, Baltimore, and Brooklyn. In four of the cities "invaded," either National or American League teams, or both, existed, causing conflicts of game and a strenuous battle for the patronage of the fans.

From a money making point of view, the Federals were not a success, but men of wealth were enlisted in their cause, and despite the experience of their first year, the officials of the new league expressed confidence that a solid foundation for the future had been laid. The "jumping" of the players in response to the new competition afforded by the Federals led to many litigations, some of which are still pending.

The year also furnished one of the most exciting pennant races in the history of the sport and witnessed the crumbling and fall of perhaps the best baseball machine that has ever been builded. The amazing spurt of the Boston Braves in the National League, which resulted in the capture of the flag and finally in the overwhelming defeat of the Philadelphia Athletics in the World's Series, created a furore in baseballdom.

The New York Giants, seemingly, were well on their way to a fourth consecutive pennant when in mid-July, Boston suddenly emerged from the league cellar and began its climb to the top. The big lead of the Giants was gradually cut down until the closing weeks of the season found the two teams running neck and neck. A series between the two resulted disastrously for the Giants, the Braves going into first place, which they never relinquished.

In the meantime the Philadelphia Athletics had had a walkover in the American League, securing such an advantage in the early stages of the race that the pennant was captured with the greatest ease. The Athletics, because of their past record, were favored by the majority of fans to capture the world's title, the wonderful showing of the Braves being attributed chiefly to the weakness of the other National League teams. But another surprise was in store. The champion Athletics failed to win a single game in the world's series.

Five players were largely responsible for the triumph of the Braves. They were: Hank Gowdy, catcher, with his terrific and timely hitting; Dick Rudolph and Bill James with their masterly pitching, and Johnny Evers and "Rabbit" Maranville with their brilliant defensive work. The score of each contest follows: Boston 7, Philadelphia 1; Boston 1, Philadelphia 0; Boston 5, Philadelphia 4; Boston 3, Philadelphia 1.

The composite score gave Boston a batting average of .244 and a fielding average of .978 as against a batting average of .172 for Philadelphia and a fielding average of .983. The paid attendance was 111,009 and the receipts $225,739, both showing a big falling off as compared with the 1913 series.

The race in the Federal League had an exciting finish. It was not until a few days before the close of the season that the Indianapolis team gained a permanent hold on first place.

The leading batter in the National League was Jake Daubert of the Brooklyn Superbas who had an average of .329. In the American League Ty Cobb of Detroit repeated his wonderful showing of previous years in again capturing the honors with the stick. His average was .368. Benny Kauff of Indianapolis led the Federal League in batting with an average of .366. The leading pitcher of the National League, as based on the average number of runs scored per 9-inning game, was Billy Doak of the St. Louis Cardinals, his mark being 1.72. In the American League "Dutch" Leonard of the Boston Red Sox carried off the laurels with an average of 1.01. Russell Ford of the Buffalo team made the best showing of the Federals with an average of 1.56. The leading base runners of the three leagues were: George Burns of the New York Giants, Eddie Collins of the Philadelphia Athletics, and Benny Kauff of the Indianapolis Feds.

The final standing of the clubs in the National League was: Boston won 94, lost 59; New York won 84, lost 70; St. Louis won 81, lost 72; Chicago won 78, lost 76; Brooklyn won 75, lost 79; Philadelphia won 74, lost 80; Pittsburgh won 69, lost 85; Cincinnati won 60, lost 94. The American League standing was: Philadelphia won 99, lost 53; Boston won 91, lost 62; Washington won 81, lost 73; Detroit won 80, lost 73; St. Louis won 71, lost 82; New York won 70, lost 84; Chicago won 70, lost 84; Cleveland won 51, lost 102. The rating of the Federal League follows: Indianapolis won 88, lost 65; Chicago won 87, lost 67; Baltimore won 84, lost 70; Buffalo won 80, lost 71; Brooklyn won 77, lost 77; Kansas City won 68, lost 84; Pittsburgh won 64, lost 87; St. Louis won 62, lost 89.

The pennant winners in the more important leagues in 1914 were: International, Providence; American Association, Milwaukee; Southern, Birmingham; Eastern Association, New London; Pacific Coast, Portland; New England, Lawrence; Canadian, Ottawa.

The college baseball season, as usual, was unsatisfactory in the problem presented to pick a championship team. Harvard, Cornell, and Pennsylvania all had first class nines with the Crimson displaying more efficient batting and better fielding prowess. Brown, Yale, Williams, and Dartmouth also showed considerable strength.

Some of the more important intercollegiate games were: Columbia 6, Pennsylvania 1; Yale 12, Mt. St. Joseph, 9; Harvard 15, Army 6; Pennsylvania 6, Yale 5; Princeton 6, Brown 2; Columbia 6, Fordham 2; Yale 8, Columbia 3; Harvard 10, Navy 5; Pennsylvania 2, Rutgers 0; Princeton 10, Fordham 1; Brown 3, Yale 2; Georgetown 10, Yale 1; Columbia 9, Stevens 1; Lafayette 5, Pennsylvania 1; Princeton 5, Virginia 4; Yale 2, Dartmouth 1; Columbia 8, Pennsylvania 5; Williams 3, Princeton 2; Brown 2, Yale 1; Holy Cross 3, Harvard 2; Yale 11, Amherst 1; Harvard 5, Williams 3; Pennsylvania 5, Columbia 4.

BASKETBALL. The struggle for supremacy in intercollegiate basketball in 1914 resulted in a tie between the fives of Cornell and Columbia, each winning eight games and losing two. The standing of the other teams follows: Yale won 6, lost 4; Princeton won 5, lost 5; Pennsylvania won 2, lost 8; Dartmouth won 1, lost 9; Halstead of Cornell scored the most points during the season, his total being 130. Bloom of Pennsylvania ranked second with 89 points.

The A. A. U. championship was won by the

Cornells of Chicago with the Y. M. Fellowship Club of Chicago second. The New York State championship was won by Utica, Troy finishing second. In the New England League Newton was the victor and in the Connecticut Valley League Winfield carried off the laurels.

BATTERIES, ELECTRIC. See ELECTRIC BATTERIES.

BATTLESHIPS. The great war has accelerated the construction of battleships in hand—especially in Great Britain and Germany—but has not increased the number so far laid down. It is reported that Holland contemplates building five dreadnoughts of moderate size and there is a strong sentiment in the United States for naval increase. The numbers of ships completed and building for the various navies are shown in the tables given under Naval Progress (q.v.). The design of the most recent battleships exhibit characteristics as shown under the following heads:

DIMENSIONS. The tendency to increased size continues, thus:

BATTLESHIPS

Nation	*Latest type*	*Largest previous type*
France	29,500	24,800
Germany	30,000	29,000
Great Britain	27,000	27,500
Italy	28,000	22,500
Japan	31,300	21,000
Russia	22,485	23,000
United States	32,000	31,400

BATTLE CRUISERS

Nation	*Latest type*	*Largest previous type*
Germany	28,000	26,500
Great Britain	30,000	27,000
Japan	27,500	14,600
Russia	32,500	.....

Though the advocates of moderate dimensions are numerous, the requirements of speed, gun strategy, and protection against gunfire and torpedoes obviously demand increased size or a giving up of the attempt to obtain certain desirable qualities.

SPEED. The speed of battleships and battle cruisers has risen slightly in many navies, reaching 23 knots in the new German, Japanese, and Russian battleships and 25 knots in the Italian. The new British ships are reported to have a speed of 22.5 knots, but this is uncertain. United States, France, and Austria adhere to a sea speed of about 21 knots, preferring to add to armor and guns rather than speed.

ARMOR. The belts of new ships are wider and thicker, reaching 15 inches in recent German battleships and 16 inches in the U. S. S. *California* class. Armor for turrets and conning towers is thicker in all recent ships, particularly the American, though the armor protection of the secondary battery has, in these vessels, been omitted. The success of the torpedo in the present war is likely to result in armoring the bottoms of battleships—that is, extending the armor downward from the belt to the turn of the bilge.

ARMAMENT. There has been no change in the calibres of guns for battleships except that Austria has adopted the 14-inch gun for the ships of the 1914 programme and Italy intends to mount 15-inch guns in her latest class of dreadnoughts. The new Austrian ships will have 10 guns in four turrets arranged like those of the *Nevada* class.

TORPEDO TUBES. The number of torpedo tubes is being increased in all the recently designed battleships. The reasons for this are the increased power and range of the latest torpedoes. Many battleships are now fitted with six to eight tubes for torpedoes of the largest size, power, and range.

TORPEDO NETS are fitted to nearly all battleships and large cruisers, but their efficacy is doubtful, and if armoring the bottom proves practicable they are likely to be dispensed with altogether, or much changed in design and method of application.

MACHINERY. Nearly all new battleships are fitted with turbine engines and watertube boilers. Many boilers are arranged for oil fuel alone or oil fuel as a supplement to the coal supply. The battleship *California* of the U. S. navy will have electrically driven propellers, and the new Italian battleships will have the central screw driven by Diesel oil engines, the other screws having steam turbine machinery.

BATTLE CRUISERS. The only battle cruisers commenced in 1914 were laid down by Germany. Austria, France, Italy, and the United States have not built any; English opinion seems to be in doubt about the class; and Russia had already laid down four which are the largest warships under construction. Great Britain and Italy are building battleships of 25 knots and it is possible that this compromise as to speed might have resulted in the elimination of the cruiser altogether, were it not for the fact that future battleships must possess greater defensive power against torpedoes. Such defense can only be obtained by a sacrifice of speed, gun power, or armor. Without sacrifice of active offensive strength, speed only can be reduced. It seems probable then that battleships of 20 knots or less, but well protected against torpedo attack, will soon appear, and that battle cruisers of high speed and moderate protection are likely to reappear unless the present war proves that the strategical principles, upon which the desirability for battle cruisers is based, are erroneous or inadequate.

BATTLESHIPS VS. SUBMARINES. On June 5, 1914, Rear Admiral Sir Percy Scott of the British navy, the foremost naval artillerist, wrote to the London *Times* on the subject of the "Submarine Menace." The main points of his letter were:

(a.) Submarines have done away with the utility of surface ships.

(b.) As no man-of-war will dare to come within sight of a coast that is adequately protected by submarines, battleships will not, in future, be able to:—

1. Attack ships that come to bombard our ports.
2. Attack ships that come to blockade us.
3. Attack ships convoying a landing party.

(c.) Nor will battleships be able to:

4. Bombard an enemy's ports.
5. Blockade an enemy's ports.
6. Blockade an enemy's fleet.
7. Convoy a landing force.

(d.) As there will be no enemy's fleet to attack when it is unsafe for any fleet to put to sea, this function of the battleship will cease to exist.

(e.) If we go to war we shall have to lock our dreadnoughts up in some safe harbor if we can find one.

(f.) If, by means of submarines, we stop egress from the North Sea and Mediterranean, it is difficult to see how our commerce can be much interfered with.

(g.) Not only is the open sea unsafe, but in narrow waters and harbors surface ships are at the mercy of submarines.

(h.) What we require is an enormous fleet of submarines, airships, and aëroplanes, and a few fast cruisers, provided we can find a place to keep them in safety during war time.

While there is much important truth in Admiral Scott's letter, it is generally regarded by naval men as an exposition of the extreme view as to what may be the situation if the submarine continues to improve and the battleship finds no further means of protection against it. The present type of battleship may not long endure—it certainly will not if it is too vulnerable to any particular sort of attack, for it must change its character in order to meet that attack. But no matter what changes of form and design may be necessary, it will still be the *battleship*, the highest type of floating offensive power. It may even become a submarine vessel; but if so, its qualities of general offense must be enormously greater than any existing submarines.

Notwithstanding the apparently favorable conditions, the work of submarines in the present war is disappointing to their advocates. Of 93 ships destroyed (up to December 21), only 10 were sunk by submarines, while gunfire claimed 48, mines 27, torpedoes from large ships 2, and collisions 6. Torpedo boats and destroyers have caused no loss except through gunfire. At least eight submarines have been sunk and they have, so far as known, sunk no very important ship. That they will attempt much more is to be expected and they may do something to justify Admiral Scott's predictions; but at the end of 1914 the close blockade of the German and Austrian ports remains unbroken. See NAVAL PROGRESS; SUBMARINES.

BAUXITE. The production of bauxite, the raw material from which aluminum is made, was in the United States, in 1913, 210,241 long tons, valued at $997,698—a marked increase over the production in any previous year in the history of bauxite mining. This increase is due in a large measure to the impetus in the aluminum industry. The States which produced bauxite are Alabama, Arkansas, Georgia, and Tennessee. Arkansas led in 1913. The production of Tennessee increased substantially, while that of Georgia and Alabama declined. Though new bauxite deposits are being found from time to time and though the present demand does not appear to tax unduly the known supply of the lower-grade material, the interest now being taken in the preparation of pure alumina from clay or other silicate minerals is worthy of note. As soon as a process for the production of alumina from clay is put on a commercial basis, large quantities of low-grade bauxite containing considerable admixtures of clay will become available. The chief uses of bauxite were first, as raw material in the production of metallic aluminum; second, in the manufacture of aluminum salts; third, in the manufacture of bauxite bricks; fourth, in the manufacture of alundum for use as an abrasive; fifth, in the manufacture of calcium aluminate. See ALUMINUM.

BAYLES, GEORGE JAMES. An American educator and author, died Nov. 22, 1914. He was born in Irvington-on-Hudson, N. Y., in 1869, and graduated from Columbia University in 1891. In 1892 he received the master's degree, and in 1895 the degree of doctor of philosophy. From 1897 to 1903 he was lecturer at Columbia. He wrote extensively on the political and social sciences. His published writings include: *Civil Church Law, New Jersey* (1898), *New York* (1898), *Massachusetts* (1899); *Civil Church Law Cases* (1900); *Woman and the Law* (1901). He contributed to the Annals of the American Historical Association on American ecclesiology, and to the first edition of the NEW INTERNATIONAL ENCYCLOPÆDIA. He was a member of several learned societies.

BEATTY, SIR DAVID. See WAR OF THE NATIONS.

BEATTY, WILLIAM HENRY. An American jurist, died Aug. 4, 1914. He was born in Lucas Co., Ohio, in 1838, and attended the University of Virginia from 1856 to 1858. In 1863 he removed to Nevada, where in 1864 he was appointed district judge, serving until 1874. He was appointed associate justice of the Supreme Court of Nevada in 1875, serving for three years. From 1879 to 1880 he was chief justice. He went to California and in 1889 was appointed chief justice of the Supreme Court of California for the term expiring 1915.

BEAUX-ARTS ARCHITECTS, SOCIETY OF. An association formed for the education of students in architecture. It comprises a system which includes the establishment, in different cities in the United States, of schools in which instruction in architecture may be obtained. This instruction is based on the instruction given in the Ecole des Beaux Arts in Paris. Many colleges and universities throughout the country avail themselves of the programme used by the society in its courses of instruction. Schools are formed in each city by groups of students who wish to carry on the study of architecture, instruction is given by a master or patron, whose work is given free, and the school is supported by contributions of the students. The committee on education of the society issues each year a certain number of programmes which include problems to be worked out by the different schools. These competitions are designated "Class A" and "Class B" competitions. During the season 1913–14 there were 1100 students registered in the society from 57 different cities. The society awards four prizes: The Warren Prize, offered for general excellence in planning a group of buildings; the Pupin Prize, for decorative treatment of some appliance; the Goelet Prize, for excellence in planning a city block; and the Bacon Prize, for the greatest number of honors obtained in "Class A." Mr. Bacon also offers each year a Paris prize, the winner of which is chosen to pursue studies in the first class in the Ecole des Beaux Arts in Paris. The Paris prize in 1913–14 was won by Harry Sternfeld, of the School of Architecture of the University of Pennsylvania. During the season 4106 preliminary sketches and 2926 rendered sketches were received.

BEAVER, JAMES ADDAMS. An American

public official, former Governor of Pennsylvania, died Jan. 31, 1914. He was born at Millerstown, Pa., in 1837, and graduated from Jefferson College in 1856. He studied law in 1858 and was admitted to the bar, beginning practice in the following year at Bellefonte, Pa. In 1861 he was commissioned second lieutenant in the Second Pennsylvania Infantry, and later in that year became lieutenant-colonel in the Forty-fifth Pennsylvania Infantry. In 1862 he was appointed colonel of the One Hundred and Forty-eighth Pennsylvania Infantry. He was brevetted for meritorious conduct, particularly for valuable services at Cold Harbor. He received wounds at Chancellorsville, Petersburg, and Ream's Station, and was honorably discharged from the service on Dec. 22, 1864. After the war he resumed law practice in Bellefonte. From 1880 to 1887 he was Major-General of the Pennsylvania National Guard. He was defeated for the Governorship in 1882, but was elected in 1887, serving until 1891. From 1896 to 1906 he was judge of the Superior Court of Pennsylvania and was reëlected in the latter year to serve for the term ending 1916. He was a delegate to the Republican National Convention in 1880, and in 1888 and 1895 was vice-moderator of the Presbyterian General Assembly. He was a member of the President's commission for investigation of the War Department in 1898. For more than 25 years he was president of the board of trustees of the Pennsylvania State College and for one year he was acting president of that college.

BECKHAM, John Crepps Wickliffe. An American public official, elected in 1914 United States Senator from Kentucky to succeed Johnson N. Camden (q.v.), whose term expired on March 4, 1915. He was born in Bardstown, Ky., in 1869, and was educated at Central University, Ky. From 1888 to 1892 he was principal of the Bardstown High School. In 1889 he was admitted to the bar and began practice in 1894. From 1908 to 1911 he was editor of the *Kentucky State Journal*. He was elected a member of the Kentucky House of Representatives in 1894, was reëlected in 1896, and in 1898 was Speaker of the House. In 1899 he was elected Lieutenant-Governor on the ticket with Governor Goebel, and upon the death of the latter on February 3, 1900, became Governor. He was elected Governor for successive terms from 1900 to 1907. In 1907 he was the unsuccessful Democratic nominee for United States Senator. He was nominated for Senator in the primaries of 1914 and in the following November was elected. See Kentucky.

BEER. See Liquors.

BELGIAN CONGO. See Congo, Belgian.

BELGIAN RELIEF. See Relief for War Victims.

BELGIUM. A constitutional monarchy of western Europe, lying between France and the Netherlands and bordering on the North Sea. The capital is Brussels, but during the European war in 1914 the government was removed first to Ostend and later to Le Havre, France.

Area and Population. The area and *de jure* population by provinces, census of Dec. 31, 1910; the population as calculated Dec. 31, 1911; the percentage of increase in the population from 1831 to 1911; and the density per square kilometer according to the census of 1910 are shown in the table following:

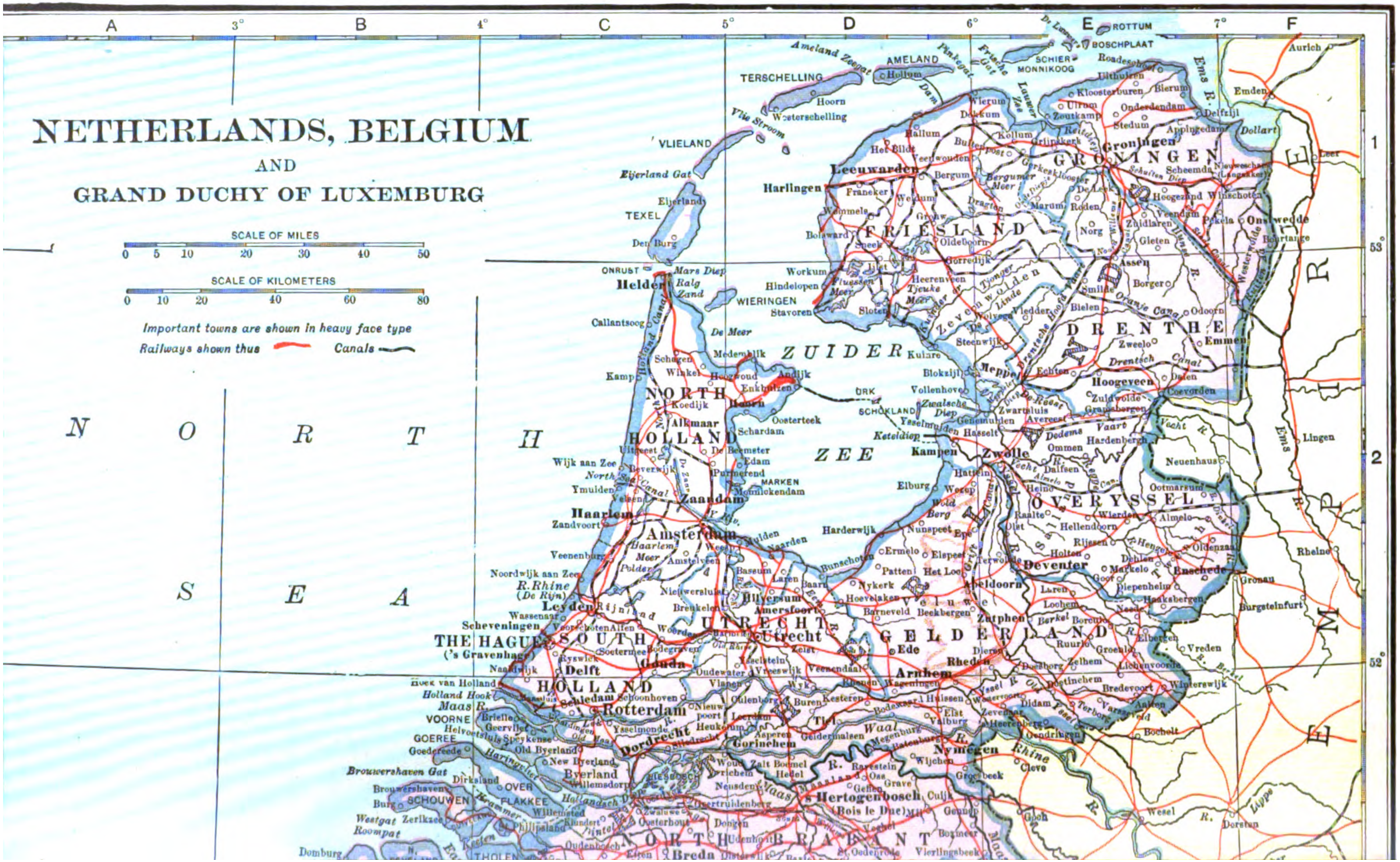
Provs.	*Sq. km.*	*Pop. 1910*	*1911*	*Per cent increase 1831-1911*	*Density sq. km. per*
Antwerp	2,832	968,677	987,201	182.10	348
Brabant	3,283	1,469,677	1,494,416	165.99	455
W. Flanders	3,234	874,135	878,417	44.42	272
E. Flanders	3,000	1,120,335	1,125,814	51.53	375
Hainaut	3,722	1,232,867	1,239,712	102.18	333
Liége	2,895	888,341	890,918	137.56	308
Limbourg	2,408	275,691	279,170	74.38	116
Luxemburg	4,418	231,215	231,314	43.89	52
Namur	3,660	362,846	363,449	70.01	99
Total	29,451*	7,423,784	7,490,411	97.85	254
De facto		7,416,454			

* 11,371 square miles.

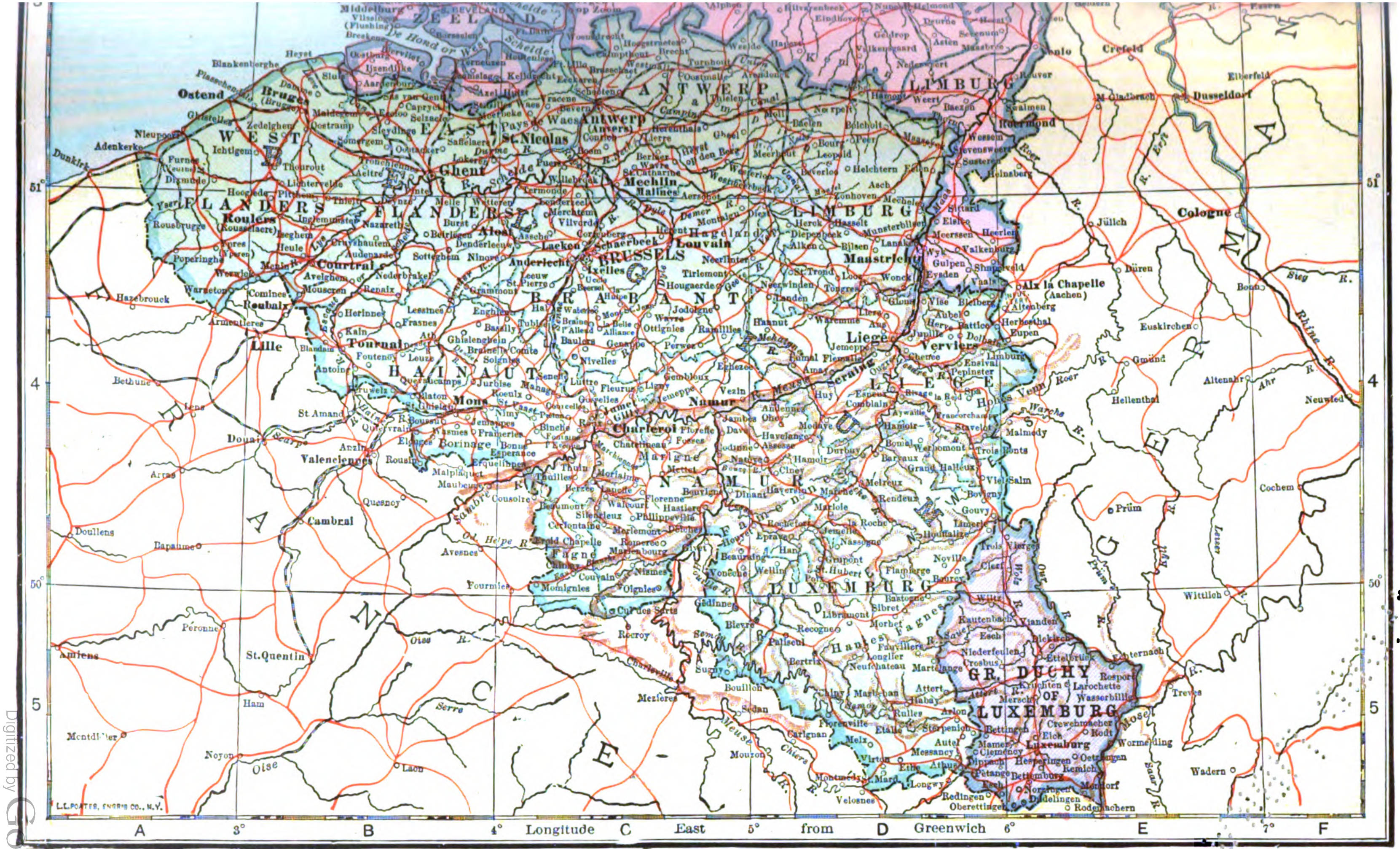
Of the total population in 1910, 3,680,790 were males, and 3,742,994 were females. The census of 1900 returned 6,693,548, and that of 1880 returned 5,520,009. Since 1856 the population shows an augmentation of 63.90 per cent. The augmentation during the decade 1900–10, due to excess of births over deaths, was 717,562, and that due to excess of immigration over emigration was 12,673. Of the total population in 1910, 2,833,334 spoke French only, 3,220,662 Flemish only, 31,413 German only, 871,288 French and Flemish, 74,993 French and German, 8652 Flemish and German, and 52,547 all three languages. In addition there were 330,893 inhabitants, including children over two years, speaking no one of the three languages. The number of marriages in 1911 was 59,370; births, 171,802; deaths, 122,843; still births, 7557; immigrants, 41,062; emigrants, 33,007. The population of Antwerp as calculated Dec. 31, 1911, was 308,618 (with suburbs, 407,773); Brussels, 176,947 (737,432); Liége, 167,676 (243,865); Ghent, 166,715 (211,081); Schaerbeek,* 85,399; Ixelles,* 76,405; Molenbeek-St.-Jean,* 74,857; St.-Gilles,* 66,592; Anderlecht,* 64,425; Malines, 59,191; Bruges, 53,484; Borgerhout, 50,583; Verviers, 46,485; Ostend, 42,638; Louvain, 42,307; Seraing, 41,389; Tournai, 37,198; Courtrai, 35,872; Laeken, 35,714; Alost, 35,272; St.-Nicolas, 34,881; Etterbeek, 33,779; Namur, 32,444; St.-Josse-ten-Noode, 32,282; Berchem, 30,996; Charleroi, 28,891; Uccle, 28,127; Jumet, 28,020; Mons, 27,904; Lierre, 25,985; Forest, 25,671; Roulers, 25,488. The asterisks mark faubourgs of Brussels. The four cities of Antwerp, Brussels, Ghent, and Liége, with their environs, contain 21.16 per cent of the population of the kingdom; but the appearance of urbanization induced by these figures is offset by the fact that the dependent communes cover areas with boundaries widely separated from the urban centres; within these confines are areas devoted to agriculture.

Education. Of the censused population in 1910, the proportion above eight years of age who could neither read nor write was 13.1 per cent; in 1900, 19.1; in 1890, 25.0; in 1880, 30.26. Of the 67,396 youths called for military service in 1913, 4207 (9.24 per cent) could neither read nor write.

Schools are maintained by communal taxation with provincial and State grants, and a law to make primary education compulsory was under consideration in 1914. There are many schools under ecclesiastical control, and this condition is a source of grievance to the Liberal and Socialist parties. There were 7590 public primary schools in 1911, with 934,830 pupils; 3186 in-



NETHERLANDS, BELGIUM
AND
GRAND DUCHY OF LUXEMBURG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FRANCE
GERMANY
Ostend
Bruges
Ghent
Antwerp (Anvers)
St. Nicolas
Mechlin (Malines)
Brussels
Louvain
Courtrai
Roulers
Tournai
Mons
Charleroi
Namur
Liege
Verviers
Maastricht
Hasselt
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fant schools, with 275,911; 4940 adult primary schools, with 246,292; 57 primary normal schools, with 4967. There are both State and private secondary schools, and special, technical, and fine arts institutions, besides four universities, two State and two free, with a total attendance in 1911–12 of 2100.

Although the majority of the population are Roman Catholics, full religious liberty prevails. The State contributes to the support of the clergy of all denominations.

AGRICULTURE. The total area returned as agricultural (1895) was 2,607,514 hectares, of which 1,916,690 hectares were under crops, 521,495 under forests, and 169,329 uncultivated. The agricultural area was diminished during the period between 1880 and 1895 by 97,443 hectares, and the diminution has since steadily continued. The area under main crops declined from 1880 to 1895 by 66,880 hectares, while the area under forests was increased by 32,072 hectares. To the cultivation of cereals there were devoted 934,663 hectares in 1880 and 809,691 hectares in 1895; legumes, 33,093, and 26,325; industrial plants, 64,150, and 51,642; potatoes, 199,357, and 184,691. Sugar-beet cultivation increased from 32,627 hectares in 1880 to 54,099 hectares in 1895; roots, from 36,153 to 53,801; forage plants, from 574,881 to 637,907. A further decline in cereal cultivation is notable in 1911—744,782 hectares; legumes, 13,575; forage plants, 386,472. Industrial plants increased to 74,348. The number of persons engaged in agricultural pursuits constantly decreases; in 1864, 24.98 per cent of the population was so engaged; in 1880, 21.77; in 1895, 18.79.

In the table below are shown areas devoted to main crops and production for two years (1913–14 subject to revision) with production per hectare in 1912–13:

	Hectares		*Quintals*		*Qs. per ha.*
	1913-14	*1912-13*	*1912-13*	*1912-13*	*1913-14*
Wheat ..	159,494	161,817	4,019,505	3,802,699	25.2
Rye	....	66,000	....	528,000	....
Barley .	34,033	34,123	918,083	921,821	27.0
Oats ...	271,694	277,694	6,960,945	7,220,044	25.6
Flax	23,138	......	98,286†	......	4.2
Beets* ..	52,419	52,588	13,919,175	......	265.5
Tobacco	4,023	4,172	89,369	......	22.2

* Sugar beets. † Seed; fibre production, 178,884 quintals.

In the table below is shown the number of live stock on farms for comparative years:

	1880	*1895*	*1912*	*1913*
Horses ..	271,974	271,527	262,709	267,160
Cattle ...	1,382,815	1,420,976	1,830,747	1,894,484
Sheep ...	365,400	235,722	....	....
Swine ..	646,375	1,163,133	1,348,415	1,412,293

Of the horses in 1913, 3575 were stallions of three years and over and 12,808 under three years; 119,154 and 50,891 mares; 48,959 and 22,773 geldings. Of the cattle, there were 12,014 bulls two years and over and 11,545 under two years; 936,800 milch cows; 29,497 oxen; 91,223 fat and 102,210 unfattened steers; 534,177 heifers, and 132,018 steer calves. The swine included 3963 boars, 146,165 sows, 515,491 fat stock, and 746,674 young pigs.

MINING AND METALS. The number of conceded coal mines in 1911 was 216, of which 127 were in operation; total area, 172,069 hectares; total output, 23,053,540 tons, valued at 340,279,000 francs. Coal mines in 1912 numbered 209, of which 126 were in operation, with 145,670 laborers, producing 22,972,000 tons, valued at 380,444,000 francs. In the table below are shown output in tons and value in francs of output of the metallic mines for four years.

	1880	*1900*	*1910*	*1911*
Iron:				
Tons	258,499	247,890	122,960	150,500
Francs ...	1,875,000	1,320,100	566,950	766,400
Pyrites:				
Tons	7,918	400	214	122
Francs ...	164,000	1,140	1,900	900
Calamine:				
Tons	15,785	3,000	8	...
Francs ...	696,000	217,150	200	...
Blende:				
Tons	23,080	5,716	1,434	836
Francs ...	1,546,370	339,180	139,600	14,250
Lead:				
Tons	5,484	280	152	82
Francs ...	892,000	63,280	26,450	14,250
Manganese:				
Tons	700	10,820	6,270	...
Francs ...	4,000	130,350	106,200	...

Iron ore to the value of 8,231,724 francs was imported from Luxemburg in 1911, and 9,165,390 francs in 1912. The product of the zinc industry in 1911 was 198,230 tons, valued at 124,009,000 francs; of the lead industry 44,308 tons, valued at 15,572,000 francs.

The output from steel and iron works, tons and value, is shown in the table below for comparative years.

	1910	*1911*	*1912*
Pig Iron:			
Tons	1,852,090	2,046,280	2,081,290
1000 francs	120,761	133,664	160,836
Mfrd. Iron:			
Tons	299,500	290,270	332,750
1000 francs	39,494	37,487	40,025
Steel Ingots:			
Tons	1,892,160	2,192,680	2,515,040
1000 francs	161,606	201,705	242,377
Steel Rails, etc.:			
Tons	1,834,550	1,654,960	1,908,270
1000 francs	192,220	210,370	257,819

The quarries numbered 1550 in 1912, with 35,532 work people, output valued at 69,758,300 francs.

OTHER INDUSTRIES. The chief source of the country's wealth is its manufacturing industries, which, according to the industrial census of 1896, numbered 337,395 enterprises and branches. Of these, 236,000 were permanent establishments, distributed as follows: 165,000 (70.08 per cent) home industries employing no work people; 54,500 (24.09) small enterprises employing one to four workers; 14,800 (5.12) establishments employing five to 49 workers; 1500 (0.63) establishments employing 50 to 449 workers; 200 (0.08) great industries employing 500 or more workers. The census returned 169,778 persons engaged in the textile industry, 137,966 in clothing factories, 134,333 in metal works, 128,313 in mines, 93,577 in construction work, 90,443 in factories for the manufacture of food stuffs, 88,457 in timber and allied industries, and 57,702 in leather factories. There were in operation in 1911, 89 sugar works, output 234,764 tons of raw sugar; 21 sugar refineries, output 121,226 tons; 125 distilleries, output 73,864 kiloliters of alcohol at 50° G.L.;

output of the breweries was 1,703,159 kiloliters; of the tobacco manufactories, 10,141 tons. The fisheries products for 1911 were valued at 6,381,939 francs. The output of the glass factories (1900) was valued at 65,912,000 francs. The number of strikes in 1911 was 156, involving 54,947 strikers; 1906–10, 756, involving 121,416; 1901–05, 474, involving 149,987.

COMMERCE. Imports for consumption and exports of domestic produce are shown in the table below, together with transit trade, for successive years, in thousands of francs.

	1906	*1910*	*1911*	*1912*
Imports	3,454,000	4,265,000	4,508,500	4,958,000
Exports	2,793,800	3,407,400	3,580,300	3,951,500
Transit	2,268,800	2,287,200	2,298,900	2,437,300

The details of the special trade in 1912 and 1913, as compared with 1908, are given in thousands of francs in the table below:

Imports	*1908*	*1912*	*1913*
Wool	168,554	428,629	410,198
Wheat	383,820	401,908	398,186
Cotton	51,492	211,927	210,420
Lead	22,599	29,495	29,067
Raw hides	110,265	179,818	189,156
Coal	108,508	148,409	161,957
Corn	75,884	139,047	110,425
Rubber	......	184,654	145,285
Flax	62,020	108,920	100,673
Beer	......	11,422	13,078
Barley, etc.	59,150	91,733	73,018
Coffee	65,204	86,663	92,830
Seeds	......	143,656	172,725
Building wood	......	123,074	124,505
Jute	......	17,617	14,673
Pig iron	......	58,449	48,823
Machinery	72,609	97,595	107,036
Oil cake	......	53,318	56,309
Copper	34,238	47,902	42,082
Chemical products	108,825	120,568	141,696
Petroleum (refined)	45,792	45,008	42,108
Dyes and colors	70,637	57,200	65,289
Wine	......	35,915	40,842

Exports	*1908*	*1912*	*1913*
Wool	82,596	396,001	350,497
Flax	82,144	140,875	132,828
Flax yarns	......	131,018	114,402
Zinc	74,126	120,017	98,499
Raw hides	82,309	119,782	112,884
Vehicles	......	119,821	94,884
Rubber	......	109,945	109,249
Iron and steel	197,305	262,149	251,315
Wheat	138,190	93,612	78,126
Coal	118,331	92,309	90,220
Cotton	54,909	92,882	84,348
Vegetable oil	......	48,512	31,206
Copper	20,686	29,819	32,771
Machinery	193,567	94,250	77,112
Oil cloth	......	2,441	2,854
Window glass	......	48,225	45,741
Dyes and colors	36,861	62,249	68,127
Corn	......	44,071	24,880
Lead	23,081	32,191	34,712
Horses	28,208	37,831	40,894
Wool yarns	36,069	61,868	65,092
Chemical products	57,660	83,285	93,601
Paper	......	38,687	37,288

The principal countries of origin and destination with the value of their trade for two years are shown in the table below, values in thousands of francs:

	Imports		*Exports*	
	1912	*1911*	*1912*	*1911*
France	738,761	908,048	695,105	752,314
United States	341,423	413,829	113,982	145,128
United Kingdom	436,220	505,646	498,187	594,625
Netherlands	298,217	356,573	352,346	367,599
Germany	602,398	703,120	959,331	1,007,469
British India	267,614	249,551	34,967	40,389
Russia	318,136	272,827	66,904	83,496
Rumania	245,289	200,962	24,283	17,771
Argentina	272,328	305,524	33,661	17,981
Sweden	41,464	39,144	12,739	16,212
Norway	30,528	36,246	15,785	17,891
Brazil	37,916	49,437	52,909	39,549
Italy	41,412	47,037	66,675	74,851
China	25,117	40,736	48,978	34,425
Australia	162,199	164,512	27,689	29,048
Spain	54,422	52,813	47,671	44,221
Chile	80,595	65,936	20,877	25,965
Egypt	8,150	12,779	24,503	29,025
Switzerland	14,620	18,471	51,598	52,162
Belgian Congo	57,675	60,945	26,552	29,258
Austria-Hun.	12,568	13,995	38,626	46,124

COMMUNICATIONS. At the end of 1912 there were 4719 kilometers of railway in operation, of which 4369 were operated by the State. Local lines, 3855 kilometers. The Belgian railway lines, as a result of the war, naturally came into the possession of the German authorities and were operated by them regularly after November 19. They constituted three railway administration departments with headquarters at Brussels, Charleroi, and Libremont. At the end of the year new trains had been added to a service somewhat disorganized and regular traffic was maintained between Brussels and Antwerp, though the time of the journey was still about two hours. It was reported late in the year that the employees on the Belgian railways had gone on strike and refused to work for the Germans, many having departed for England, and others having sought work on French railways. There were 7975 kilometers of telegraph lines and 43,547 of wires; in addition there were 520 kilometers of wires installed at the expense of private railway companies. There were 1659 telegraph stations, 1 wireless station, and 20 on board vessels. Urban telephone wires, 233,086 kilometers; interurban wires, 29,434. Post offices, 1708. The merchant marine included at the end of 1912, 97 steamers, of 174,021 tons, and 8 sailing vessels, of 7616 tons. Vessels entered in the 1912 trade, 11,230, of 16,353,933 tons; cleared, 11,214, of 16,319,056 tons.

FINANCE. The franc, worth 19.3 cents, is the unit of value. In the table below are given, in thousands of francs, receipts ordinary (A) and extraordinary (B) and ordinary and extraordinary expenditure for four years:

	1908	*1909*	*1910*	*1911*
Rev. A	616,986	645,107	682,487	695,252
Rev. B*	829	1,052	5,724	1,019
Total rev.	617,815	646,159	688,211	596,271
Expend. A	613,021	634,456	672,954	689,166
Expend. B	157,430	151,747	156,502	121,761
Total exp.	770,451	786,203	829,456	810,927

* Exclusive of loans.

The 1914 budget is detailed in the table below, amounts in thousands of francs:

Revenue	*1000 fr.*	*Expend.*	*1000 fr.*
Property taxes	30,362	Public debt	217,508
Personal taxes	27,257	Civil list, dotations	5,614
Trade licenses	9,500	Ministries:	
Tax on incomes	18,000	Justice	32,248
Motor cars	1,500	Foreign affairs	5,127
Cinemas	500	Interior	7,979
Mines	29	Sciences and arts	43,179
Customs	72,031	Industry	26,873
Excise	94,703	Railways	246,484
Various	1,652	Marine, posts, tele.	54,693

Revenue	*1000 fr.*
Registration, etc.	49,100
Succession	82,100
Stamps	14,500
Fines, etc.	8,018
Rivers, etc.	3,690
Railways	362,800
Tel. & Tel.	28,535
Post offices	27,950
Steamboats	2,210
Domains, etc.	5,590
Various	28,179
Repayments	9,609
Total	807,318

Expend.	*1000 fr.*
War and gendarmerie	101,096
Finance	26,544
Public works and agriculture	85,139
Colonies	1,448
Repayments, etc.	2,826
Total	806,754

The total debt stood Jan. 1, 1913, at 3,739,133,738 francs—219,959,632 fr. share of the Netherlands debt at 2½ per cent, and 3,519,174,106 fr. loans at 3 per cent. The greater part of the debt was raised for public works, and the interest is more than covered by the revenue from railways alone.

GOVERNMENT. The king is the executive, aided by a responsible ministry. The legislative power is exercised conjointly by the king and a parliament made up of two houses—a senate and an elective chamber of representatives. The reigning sovereign in 1914 was Albert Leopold, born April 8, 1875, son of the late Prince Philip of Saxe-Coburg and Gotha and of Flanders, and of the late Princess Marie of Hohenzollern-Sigmaringen. He succeeded his uncle, Leopold II, Dec. 23, 1909. On Oct. 2, 1900, he married Elizabeth, Duchess of Bavaria; they have three children, Leopold Philip, born Nov. 3, 1901 (heir-apparent), Charles Theodore, born Oct. 10, 1903, and Marie José, born Aug. 4, 1906.

The senate and chamber meet annually in the month of November, and must sit for at least 40 days; but the king has the power of convoking them on extraordinary occasions, and of dissolving them either simultaneously or separately. In the latter case a new election must take place within 40 days, and meeting of the chambers within two months. Money bills and bills relating to the contingent for the army originate in the chamber of representatives.

The senate in 1913 included 70 Catholics, 35 Liberals, 15 Social Democrats. The chamber of representatives in 1913 included 101 Catholics, 44 Liberals, 39 Social Democrats, and 2 Christian Socialists.

The executive government consists of 11 departments, under the following ministers:

Ch. de Broqueville (appointed Nov. 11, 1912), president of the council and minister of war; P. Poullet (appointed June 17, 1911), minister of sciences and arts; Paul Berryer (appointed Sept. 5, 1910), minister of the interior; M. Levie (appointed June 17, 1911), minister of finance; G. Helleputte (appointed Nov. 11, 1912), minister of agriculture and of public works; M. J. Davignon (appointed May 2, 1907), minister of foreign affairs; H. Carton de Wiart (appointed June 17, 1911); J. Renkin (appointed Oct. 30, 1908), minister of the colonies; M. A. Hubert (appointed May 2, 1907), minister of industry and labor; A. Van de Vyvere (appointed Nov. 11, 1912), minister of railways; P. Segers (appointed Nov. 11, 1912), minister of marine and of posts and telegraphs. The ministry of marine was created in November, 1912.

By the treaty of London, Nov. 15, 1831, the neutrality of Belgium was guaranteed by Austria, Russia, Great Britain, and Prussia.

ARMY. The army of Belgium was organized on the principle of universal service, by the law of Aug. 30, 1913, which substituted new conditions for those established by the law of Dec. 14, 1909, but affirmed the general principle of the former legislation. On a peace basis in 1913 the Belgian army consisted of three cavalry brigades and six infantry divisions, with artillery, engineers, medical services, supplies, and transport, cyclist and air-craft companies. In case of war it was proposed to double the infantry strength by forming second battalions. The military situation of Belgium was realized in 1912, when the necessity of strengthening the army was brought before the legislature, and the Premier, Monsieur de Broqueville, in November of that year, referring to the guarantee of Belgian interests and neutrality by Great Britain in the treaty of 1899, showed that the groupings of the great powers of Europe had resulted in alliances and ententes, which might in case of war "remove from the guarantee the value, which the neutrality of the guarantor alone could assure." This involved the provision of an adequate army to protect Belgian neutrality and the integrity of the country against possible invasion, and during 1914 reorganization was in progress under the terms of the law of the previous year. There was also involved the strengthening of the permanent fortifications at Antwerp in 1913. There were being installed 145 armored turrets in the new chain of detached forts, of which 63 were armed by Cockerill, who was providing in the first advance line 15 turrets, with 15 c.m. (9 inch) guns, 28 with 12 c.m. (4.7 inch) mortars, 14 with 7.5 c.m. (2.9 inch) guns, and 6 with 5.7 c.m. (2.24 inch) guns. Fifty per cent of the first line were armed with 2.9 inch guns, and 32 others also by guns from other ordnance works. These latter turrets were of slighter construction and were not furnished with electrical plants. The Belgian artillery employed a standard field gun of Cockerill design, with a calibre of 2.95 inches, and large calibre guns were installed in the coast defenses and in the armed cupolas. The rifles, carbines, and revolvers were made for the most part in the Liége district, including the "Fabrique Nationale d'Armes de Guerre" at Herstal, a suburb of Liége.

. The Belgian army, previous to the outbreak of the war, benefited materially by the army reform legislation of 1913, and even in the few months that the new organization was in progress much was accomplished. In 1913 the peace establishment was 3542 officers and 44,061 men. The principle of universal military service in Belgium had been accepted, and the peace strength increased, while at the same time a rapid mobilization of the individual units was arranged, so that these could be brought up to strength within 24 hours, by collecting men, horses, material, ammunition, etc., within their own districts. Before and during the war, these plans were carried out with considerable success, and the military speed manifested by the people and their willingness to bear the additional burdens imposed by the legislation of 1913 proved of considerable advantage.

HISTORY. Immediately after reassembling in January, the chamber took up the school bill, which had already been made the subject of heated partisan debates. In this bill it was proposed that State grants in aid of education should be extended on equal terms to all schools which complied with certain requirements, whether taught by laymen or by religious orders. This plan, the government contended, would do much to lessen illiteracy, and would redress the grievance of the Catholics, who complained that the Catholic schools under the existing system received little or no aid from the state, whereas the lay or nonreligious schools were subsidized from the public funds toward which Catholics as well as others must contribute. Under Premier de Broqueville's plan, the state, granting $120 a year for each class conducted by a male teacher and $100 for each class taught by a woman, would relieve the communes of three-quarters of the increased expenditure, and instruction would be made free and compulsory for all children up to the age of 14. All schools would be subject to medical inspection. The Socialists and Liberals, however, bitterly protested against the granting of subsidies to Catholic schools. According to their view this would be granting public money for denominational purposes, and therefore unconstitutional. They maintained, moreover, that the state ought not to support Catholic teachers who would inculcate doctrines opposed to Liberal and Socialist views. This criticism was crystallized into an amendment, which would prohibit any instructor in any state-subsidized school from attacking the political, religious, or philosophical principles of the families of its pupils. The Catholics opposed such an amendment, seeing in it an indirect attempt to eliminate all religious teaching from education. The bill was passed, without radical amendment, by the Catholic majority in the chamber on February 18, and in the senate on May 15; on both occasions the Liberals and Socialists walked out in a body as a manifestation of their displeasure.

Elections were held on May 24 to renew the representation in the chamber of four provinces out of nine: Hainaut, East Flanders, Liége, and Limbourg. The electoral campaign was more quiet than the one in 1912; for whereas in the 1912 election Liberals and Socialists had attempted to combine against the government, hoping to secure a majority of the Left, in 1914 the two Opposition parties were no longer in alliance and had not the slightest hope of overturning the Catholic party which had governed Belgium for 30 years, liberalizing the constitution, reorganizing the national defense, establishing universal education, and working out a code of enlightened social legislation. In attacking the government, the Opposition relied primarily on the question of electoral reform. The electoral reform commission appointed by the government in 1913 worked in secret, and was considering only the suffrage for the election of provincial and communal councilors; therefore the advocates of "one man one vote" had a genuine grievance against the government. Dissatisfaction also took root in the ministerial financial policy, which, the Opposition alleged, involved too much borrowing. Finally, the question of Old Age Pensions played an important part in the electoral contest. In order to amend the present inadequate system of voluntary contribution (toward Old Age Pensions) supplemented by state subsidies, the government proposed to extend the principle of obligatory insurance against old age—which as yet had been applied only to colliery workers—to all workers earning less than 2400 francs a year. The ministerial measure also provided obligatory insurance against sickness and premature incapacity, with contributions by worker, employer, and state. The Socialists would have placed solely on employer and state the burden of pensions, and would have done away with the mutual insurance societies, which were not infrequently presided over by the local *curé*. The elections, which took place on May 24, resulted in a gain of 2 seats for the Liberals, and of 1 for the Socialists, so that the new Chamber included 99 Catholics, 46 Liberals, 40 Socialists, and 2 Christian Democrats. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

BELGIUM AND THE WAR. On the evening of August 2, the German minister at Brussels handed to the Belgian government an ultimatum demanding that German troops should be allowed free passage through Belgium into France. In consequence of the Belgian government's indignant refusal to permit what it regarded as a violation of Belgium's neutrality, a German invasion of Belgium was immediately begun. The causes leading up to this event, and the details of the subsequent military operations on Belgian soil, are treated in the article on the WAR OF THE NATIONS (q.v.). In the face of this national disaster, and in an unparalleled outburst of national patriotism, even the most fundamental party differences and social distinctions were put aside. "Irreconcilable" Socialists sprang to the support of their king, and the Socialist leader, M. Vandervelde, entered the Clerical cabinet, August 4. Forty millions were voted for defense at the war session of Parliament, August 3–4. Later in August, France and England agreed to advance Belgium $50,000,000 apiece for the prosecution of the war. In spite of the heroic Belgian resistance, the German armies entered Brussels on August 20, and rapidly overran the greater part of the kingdom. The Belgian government offices had already been moved from Brussels to the strongly fortified town of Antwerp. Thence the government fled to Ostend, then to Havre, in France, while the Germans besieged and captured Antwerp. King Albert spent much of the time with his army, but made visits to London and Paris. The actual ruler of Belgium, however, was Field Marshal Baron von der Golz, appointed German Military Governor of Belgium on August 26. Heavy requisitions, mostly of money, were made by the German military officials upon the conquered Belgian cities. In December the refusal of the German government to recognize the exequaturs of foreign consuls in Belgium was interpreted in some quarters as an indication that Germany intended to annex Belgium, but the *Norddeutsche Allgemeine Zeitung* explained the step as the consequence of the fact that some three hundred now hostile Belgians had hitherto held posts as consuls for allied or neutral states. The menacing advance of the German armies, the destruction of Belgian towns, the devastation of the country, and the general paralysis of productive industry all helped to plunge the Belgian nation into the deepest misery. To the grief of the women who had sacrificed their husbands and sons, was added the despair of the old people who had been compelled to forsake their homes, and the sufferings of the fatherless children who lacked for food. Thousands of Belgians fled to France, England, and America. Many more remained in the Belgian cities, destitute. For their relief generous contributions were made by allied and neutral nations. Even from distant Australia came material aid. From the United States came substantial financial contributions, and a "Christmas Ship" laden with toys for the children. The sympathetic interest with which the plight of Belgium was regarded in the United States was doubtless heightened by the mission sent by the King of Belgium to the United States. Four members of the Belgian cabinet—M. Henry Carton de Wiart, M. Hymans, M. De Sadeleer, and M. Vandervelde, accompanied by Count Louis de Lichtervelde, visited the United States in September. On September 16, M. Carton de Wiart, in the name of the mission, delivered an address to President Wilson, alleging that the German armies had invaded Belgium without just cause, and had perpetrated revolting atrocities upon the Belgians in gross violation of the rules of civilized warfare. For further information in regard to the conduct of the war in Belgium, consult the article on the WAR OF THE NATIONS.

BELGIUM, COMMISSION FOR RELIEF IN. See RELIEF FOR WAR VICTIMS.

BENEDICT XV (GIACOMO DELLA CHIESA). Elected 260th Pope, to succeed Pius X, on Sept. 3, 1914. He was born in Pagli, in the diocese of Genoa, Nov. 21, 1854. His father was Giuseppe, Marchese Della Chiesa, a nobleman of considerable wealth. The fact that he was of noble birth and wealthy parents made possible a thorough grounding in his boyhood studies, and having decided to study for the priesthood, his preparatory studies were made in the local schools at Genoa and he then took a degree in jurisprudence at the University. In 1876 he entered the Capranican College at Rome, and finally became a student at the Academy of Noble Ecclesiastics, a Roman institution which in older days of class distinction included only students of aristocratic birth, but is now open to others. His theological studies were completed in the last days of Pope Pius IX, and he was ordained to the priesthood in 1878, when he was 25 years of age. He had been a priest only five years when his promising activities came to the notice of his superiors, and in 1883 he left Italy to accompany the then Archbishop Rampolla to Madrid as secretary of the Nunciature. When Rampolla was made a Cardinal by Pope Leo XIII, and returned from Spain to Rome in 1887 he brought his young assistant back with him. The young priest's labors in Madrid made him a permanent Under Secretary of the Secretariate of State. Here as in Madrid he held the confidence of Cardinal Rampolla. After the accession of Pope Pius X, he remained at his post and the new Pope and his Secretary of State, Cardinal Merry del Val, were quick to recognize the qualities which had come so early to the notice of Pope Leo and Cardinal Rampolla. Father Della Chiesa was in turn made a prelate on July 18, 1900; consultor of the holy office on May 30, 1901, and Archbishop of Bologna on Dec. 16, 1907. When the Society of St. Jerome for the Spread of the Gospels was established at Rome, in 1902, he was its first president and its meetings were held at his residence. One of his first acts after his election as Pope was the sending to its then president, Cardinal Cassetta, on Oct. 8, 1914, a letter commending the work of the society and encouraging the spread of the Scriptures. At the time of his appointment to this office it was said that he had been chosen for the office as the best man available to combat the religious radicalism in a region recognized as the headquarters of the Modernist National Democratic League. Although little is known of his work at Bologna outside of Italy, his fame for successful achievement of notable work was widespread at home, and his care of the poor in the diocese won for him their great affection. After seven years of administrative work at Bologna he was elevated to the College of Cardinals at the Consistory on May 25, 1914. Cardinal Della Chiesa had become known as a man of diplomacy, a cool and level-headed leader, and the possessor of an even temper, who could face emergencies dispassionately. He is of the school of Cardinal Rampolla, with a keen reverence for all the traditions of the Vatican, and a foe of all that has to do with so-called Modernism in the Church. His scholarly attainments are high and he has a wide knowledge of modern conditions in all parts of the world. He was chosen Pope on the ninth ballot of the Conclave. He at once took the name of Benedict XV, it is supposed because of the intellectual excellences of Benedict XIV, who was elected Pope in 1740 and who was born in Bologna and was many years Archbishop of that See. He was crowned Pope on Sept. 8. His first encyclical, issued Nov. 1, 1914, called for renewed efforts to spread religion throughout the world and urged peace and brotherhood among peoples and nations in fear of God. "The immense spectacle of a general war," he says, "has struck us with unutterable horror and sadness." Benedict XV speaks English. He is dark complexioned, with a firm mouth, square forehead, and keen lustrous eyes. He is about the ordinary standard in height and moves and walks with great dignity. He is a thoughtful and highly gifted man of affairs.

BENEFACTIONS. See GIFTS AND BEQUESTS.

BENJAMIN, SAMUEL GREENE WHEELER. American author, artist, and diplomat, died July 20, 1914. He was born at Argos, Greece, in 1837, the son of a missionary in Asia Minor. He attended the English College at Smyrna and graduated from Williams College in 1859. From 1861 to 1864 he was assistant librarian in the New York State Library. During the Civil War he sent two companies of cavalry to the front and served in war hospitals. During the following years he read law, studied art, and for several years was at sea engaged in the mastering of seamanship. From 1883 to 1885 he was United States Minister to Persia, and was the first minister sent by the United States Government to that country. He served as art editor for several magazines, and in 1870 opened a studio as an artist in oil and water colors in Boston. He exhibited at many exhibitions and received several medals. He was a prolific writer and his published works include: *Constantinople, Isle of Pearls and Other Poems* (1861); *The Turk and the Greek* (1867); *Contemporary Art in Europe* (1877); *The Atlantic Islands* (1878); *Art in America* (1879); *Troy, Its Legend, Literature and Topography* (1881); *Persia and the Persians* (1886); and *The*

Story of Persia (1887). He also wrote much for magazines and reviews.

BENNETT CUPS. See AËRONAUTICS.

BENSON, ROBERT HUGH. An English Roman Catholic priest and writer, died Oct. 19, 1914. He was born at Wellington College in 1871, and was educated at Eton and at Trinity College, Cambridge. Father Benson was the son of the Archbishop of Canterbury and a brother of E. F. and A. C. Benson, both well-known writers. After his graduation from Trinity College he acted for a time as curate in the Eton Mission at Hackney Wick, and at Kemsing. In 1898 he became a member of the Anglican Community of the Resurrection at Mirfield, and was received into the Roman Catholic Church in 1903. In the following year he was ordained a priest. After reading for a year at Cambridge he was appointed an assistant priest, and in 1911 became private chamberlain to Pope Leo X at Rome. He acquired considerable fame as an author and as a lecturer. In the Lenten season of 1914 he delivered a series of lectures at the Church of Our Lady of Lourdes, which attracted much attention. He was a frequent visitor to the United States. He was a prolific writer and among his many publications are: *The Light Invisible; The Queen's Tragedy; The Sentimentalists; The Religion of the Plain Man; St. Thomas of Canterbury; Non-Catholic Denominations; The Coward; The Friendship of Christ; Come Rack! Come Rope!; Confessions of a Convert; Initiation;* and *An Average Man.*

BEREA COLLEGE. An institution for higher education, founded at Berea, Ky., in 1845. In addition to the college department, there is a normal school, an academy, and several vocational schools. The students enrolled in all departments of the university in the autumn of 1914 was 1067. The faculty numbered 90. Dr. Charles F. Hubbard, dean of the college, resigned, and Prof. C. F. Rumold became acting dean. There were several instructors added to the vocational schools. There were no noteworthy benefactions received during the year, but the productive funds amount to $1,050,000, and the annual income to $120,000. The library contains about 30,000 volumes. The president is William G. Frost, Ph.D., D.D.

BERIBERI. Little had studied this disease in Newfoundland since 1907 and believed it to be on the increase. He stated that beriberi was uncommon among deep-sea fishermen when a proper diet was maintained. On American fishing vessels beriberi is rarely observed, even among the halibut fishers, who are sometimes away for long periods. On Newfoundland vessels symptoms of beriberi are common, and the severe types occur not infrequently. The food on these crafts is practically identical with that of people living on shore, and consists, with little variation, of tea and bread, salt meat, and occasionally duff with raisins. Potatoes and turnips are to be had at times. The common cause both among sailors and landsmen is the lack of fresh food at certain times of the year, and a complete dependence on white flour. The Eskimo and the Indian avoid the disease by eating plenty of fresh meat. Among the last 5000 cases seen at the St. Anthony Hospital, beriberi occurred 220 times. Darling, who accompanied General Gorgas on his recent visit to South Africa and Rhodesia, regards beriberi and scurvy as nearly identical; numerous autopsies show lesions in the heart, muscle, and nerves of the same type as that observed in beriberi. The disease occurs under similar circumstances. Scurvy breaks out among laborers, soldiers in barracks and camps, among the inmates of asylums and prisons, and in times of famine, and is always immediately dependent on the continued consumption of a one-sided diet and one free from vegetables. Certain epidemics display symptoms which are closely paralleled by those of beriberi. Gorgas pointed out that the diet of the negro laborers in the Rand consists too largely of carbohydrates, considering the amount and character of the work demanded of the negro laborers. Overmilled corn was the chief article of diet, overcooked corn as well as overboiled food of all kinds; roasted meat was never supplied, and the vegetables were insufficient in quantity and overcooked. That beriberi is not unknown in the United States is indicated by a report of Parker of the United States Public Health Service, concerning cases of "jail edema" among the prisoners confined in the county jail at Elizabeth, N. J. In three years, 22 cases of "jail edema" occurred among the inmates, and it is stated that at least 80 per cent of the prisoners serving more than ninety days contract the disease. These are really cases of beriberi. No data are given as to diet and sanitation at this particular institution. See HYGIENE. A complete résumé of the knowledge of this interesting disease up to the present time may be found in *Beriberi*, by Edward B. Vedder, Captain, Medical Corps, U. S. Army (New York, 1913).

BERMUDA. A group of over three hundred small islands, islets, and rocks, lying east of North Carolina, and 677 miles from New York; a British colony. The total area is 19 square miles, and the population in 1911 was 18,994, of whom 12,303 were colored, and 6691 white. Hamilton, the capital, had 2627 inhabitants; St. George's, 1079. About one-third of the area is under cultivation, the chief products being lily bulbs and vegetables for export to the New York market. Imports of food supplies come principally from the United States. The islands are a favorite winter resort. The total imports for 1912 were valued at £637,178 (£545,540 in 1911), and the exports at £116,586 (£134,033). Tonnage entered and cleared in 1912, 1,273,666 (700,869 in 1911). Public debt 1912, £45,500. Revenue, 1912, £83,629 (£79,248 in 1911); expenditure, £78,210 (£90,100). Customs revenue for 1912, £67,672; 1911, £63,707; 1910, £64,999. The colony is administered by a governor (Lieut.-Gen. Sir George M. Bullock in 1914), who is commander-in-chief of the military forces. There is an executive council; also a legislative council, and a representative house of assembly of 36 members.

BERNHARDI, FRIEDRICH VON. See WAR OF THE NATIONS and LITERATURE.

BERTILLON, ALPHONSE. A French penologist, died Feb. 13, 1914. He was born in Paris in 1853. His father, Louis Adolph, was a famous French statistician who practiced medicine for a number of years and then devoted himself to the science of anthropology. Thus the son from his earliest boyhood heard the science of man discussed in his home. He studied medicine in connection with scientific work with his father, and was admitted to practice. In 1880 he perfected what he claimed to be an infallible identification system. At first his theories were ridiculed, but he finally succeeded in convincing the authorities, and the system was introduced in Paris in 1883. It rapidly grew in popularity until it was adopted by police departments in all parts of the world. His system of measurements continued to be an important means of identification of criminals and others, until the introduction of the fingerprint system which finally came to supersede it. Bertillon has been given credit for inventing this system, but in reality the father of the development of the fingerprint identification was Francis Galton, the English anthropologist. Bertillon's system was based on his discoveries that certain physical features and the dimensions of certain bones or bony structures in the human body remain practically the same during adult life. He took, therefore, the measures of the head length, head breadth, the length of the middle finger, the left foot, and the length of the forearm from the elbow to the little finger. These measurements were subdivided into three classes, small, medium, and large. As the system developed M. Bertillon, to make the measurements more certain, added the height of the person, color of the eyes, and the length of the little finger. All this information is entered on classified cards any one. of which is easily picked out when a particular identification is desired. By means of this system the police are able to keep record of criminals who have been arrested and convicted. M. Bertillon was also a handwriting expert, and in 1894 he was officially appointed to report on the handwriting of the bordereau in the famous Dreyfus case. He was a witness for the prosecution, testifying before the Cour de Cassation on Jan. 18, 1889. He was accused of making serious errors in his testimony, and the Municipal Council of Paris adopted a resolution calling upon the Prefect of Police to dismiss him as director of the Anthropometric Department because of these errors. He was removed on the following day, but later resumed his services in the department. Among his inventions to aid in identification work is a camera for metric photos by which the parts photographed may be measured. He wrote several volumes on the subject of his researches and studies in criminology.

BEST, DIONYSIUS F. A Roman Catholic priest, died April 26, 1914. He was born in Wales in 1862, and in 1879 entered the Order of Our Lady of Mount Carmel. He removed to the United States and was ordained to the priesthood at New Baltimore, Pa., in 1889. He was prior at Carmelite houses in Niagara Falls, New Baltimore, and Englewood, N. J. In 1909 he was appointed Provincial of the Carmelite Order of the United States and Canada. He made several official visits to the Vatican.

BIBLE SOCIETY, AMERICAN. An organization formed for the encouragement of a wider circulation of the Holy Scriptures, and for the distribution of copies of Bibles or portions of Bibles. The total issues for 1913–14 amounted to 5,251,176 volumes, an increase over 1912–13 of 1,201,566 volumes. The whole number of issues was made up of 412,229 Bibles, 763,158 New Testaments, and 4,075,789 portions of Scriptures. The principal advance was in the latter item, but more Bibles and more New Testaments were sent out in 1914 than ever before in the history of the society. Nearly one-half of these volumes, or 2,327,390, were sent out from the Bible House in New York, which is an increase of 219,531 volumes over the preceding year. The remaining volumes were sent out by the society's agents abroad. The domestic work of the society is carried on through home agencies, which include home agencies for the colored people, and agencies for each section of the country. The foreign agencies are situated in practically every country on the globe. During the 98 years of its existence, the society distributed 103,519,891 volumes. In May, 1916, 100 years' service of the American Bible Society will be completed, and a committee has been charged with the preparation of a general plan for some adequate celebration of this event. The officers are: President, James Wood; corresponding secretaries, Rev. John Fox, Rev. William I. Haven; recording secretary, Rev. Henry O'Dwight; treasurer, William Foulke.

BICKMORE, ALBERT SMITH. An American naturalist and educator, died Aug. 12, 1914. He was born at St. George, Me., in 1839, and graduated from Dartmouth College in 1860. From 1860 to 1864, with the exception of one year spent as a volunteer in the Civil War, he studied with Professor Louis Agassiz and in the latter year he received the degree of B.S. from Harvard University. He became Professor Agassiz's assistant and accompanied him to Bermuda, collecting for the Cambridge Museum. In the following three years he traveled in Europe, in the East Indian Archipelago, China, and Japan, returning by way of Siberia, Moscow, St. Petersburg, and London. In 1869 he became professor of natural history at Madison, now Colgate University. In the same year, however, he was appointed superintendent of the American Museum of Natural History and served in this post until 1884. From the latter date he was in charge of the department of public instruction at this museum, and retained this post until 1904, when he retired as professor emeritus. From 1895 to 1904 he averaged 12,000 miles of travel a year, gathering material for his lectures and for the enrichment of the museum. His lectures covered more than 200 subjects relating to geography and natural history. Several years before his death he suffered a stroke of paralysis and was forced to use a wheel chair. He continued, however, to visit the museum and attend lectures. He published accounts of travels in the East Indian Archipelago, and wrote much on geographical and other subjects. He was a member of many scientific societies.

BICYCLING. See CYCLING.

BILLIARDS AND POOL. William F. Hoppe, champion of the world at 18.2 and 18.1 balkline billiards, added more laurels to his crown in 1914 by winning the 14.1 balkline championship. That Hoppe is in a class by himself is further evinced by the record high runs and averages he scored during the year. In amateur circles Edwin W. Gardner, a former holder of the championship, recaptured his title by defeating Morris Brown, also a former champion, in the final game of the amateur tourney. The most striking figure in amateur circles, however, was Charles Heddon of Dowagiac, Mich., who set a new high run record of 135.

Alfred de Oro retained his three cushion title and thereby became the permanent possessor of the Lambert trophy. De Oro won this honor by defeating George W. Moore. The men played three blocks of 50 points, De Oro scoring 150 as against his rival's 92. In this match the champion set a new world's mark by making a run of 13 points.

Benny Allen of Kansas City won the pocket billiard championship and permanent possession of the trophy. Allen had captured the title in 1913 through his defeat of De Oro, and he successfully defended his laurels in 1914 by vanquishing Charles Weston, Edward J. Ralph, Ray Pratt, and James Maturo. In one of these matches Allen made a new world's record by running 71.

Few international contests were held during the year. Opportunity was afforded, however, for Hoppe to meet Melbourne Inman, the English champion, in a series of matches at alternate blocks of American and English billiards. Hoppe was the victor. Sels, a Belgian, had the distinction of winning a world's championship tournament over several French competitors.

BIOLOGY. See BOTANY; ZOÖLOGY; CARNEGIE INSTITUTE.

BIPLANES. See AËRONAUTICS.

BIRDS. See ORNITHOLOGY.

BIRKHIMER, WILLIAM EDWARD. An American soldier, jurist, and educator, died June 10, 1914. He was born in 1848 at Somerset, Ohio, and graduated from the United States Military Academy in 1870. He had previously served in the Civil War, enlisting as a private in 1864. He graduated from the Artillery School in 1873, was appointed first lieutenant in 1879, captain in 1898, and colonel in 1899. He was honorably mustered out of volunteer service in 1901, and in the same year appointed major in the artillery corps of the United States army. He became lieutenant-colonel in 1905, and brigadier-general in 1906. In the same year he was retired at his own request, after forty years of service. From 1874 to 1876 he was assistant professor of natural and experimental philosophy at the United States Military Academy. In 1899 he acted as associate judge of the Supreme Court in Manila. He was awarded a medal of honor for most distinguished gallantry during service in the Philippines in 1899. He was the author of: *Law of Appointment and Promotion in the Army of the United States* (1880); *Historical Sketch of the Organization, Administration, Material, and Tactics of the Artillery, United States Army* (1884); *Military Government and Martial Law* (2d ed., 1904).

BIRTH RATE. See VITAL STATISTICS.

BISMARK. See SHIPBUILDING.

BLIND, CARE OF THE. In Great Britain the problem of the care and education of the blind became the subject of parliamentary notice. A member stated that "the present system of voluntary effort in aid of the blind people of this country does not adequately meet their necessities and that the State should make provision by which capable blind people may be made industrially self-supporting and the incapable and infirm be maintained in a proper and humane manner." Material for the discussion of this subject was furnished by the appearance of the census in England and Wales made in 1911 which had just been issued. The number of totally blind was given at 26,336 of whom 13,257 were males and 13,079 were females: that is one person out of 1370 is blind. The figures were a little below the last census, taken in 1901, when the proportion was one to 1385. In 1851 one person out of every 978 was returned blind. It was pointed out, however, that in view of worthlessness of returns in regard to the degree of blindness, it was decided that every defect of vision which forbade the ordinary means of livelihood should be regarded as equivalent to total blindness. In the whole United Kingdom it is estimated that there are between 32,000 and 34,000 blind persons, of whom 5000 are in workhouses, 5000 are receiving parish relief, 7000 are beggars, and about 3000 are employed in voluntary institutions, at wages averaging $2.50 per week. Small pensions averaging $50 a year are received by 5800 blind persons from charitable organizations.

BLINDNESS. See ALCOHOL, *Wood Alcohol.*

BLOOD WASHING. Iurevich and Rosenberg have demonstrated the interesting fact that the blood can be removed from the body of animals, thoroughly washed and reintroduced without causing any appreciable morbid symptoms. In their experiments blood was taken from the carotid artery of rabbits, and drawn into test tubes containing a 1.5 per cent solution of sodium citrate to prevent coagulation. As much as one-half of the total of the animal's blood was drawn, centrifuged for about 10 minutes; the plasma removed and replaced with normal salt solution; the blood again centrifuged, warmed, and reintroduced into the animal through a vein in the ear. It was found that only a small proportion of the red blood cells was destroyed by the process, the majority remaining normal even when the blood was kept outside of the body 2 or 3 hours. The practical application of this discovery will be found in cases of toxemia, when the blood is saturated with poisonous substances. In such cases the withdrawal, purification, and return of healthy blood may prove a life-saving measure.

BLUE MILK is a phenomenon observed as early as 1838 by Steinhof. The bacteriologist Hueppe was the first to obtain, in 1884, a blue milk organism in a pure culture. Other causes for this discoloration have been suggested, such as allowing the milk to stand in iron dishes, and the eating of certain plants by cows; but the phenomenon is in the great majority of cases caused by the growth of micro-organisms in the fluid. Hammer, of the Iowa Agricultural Experiment Station, received several samples of blue milk and succeeded in isolating from them the *Bacillus cyanogenes*, the same organisms that have been isolated from other specimens of blue milk. The new and important fact, however, brought out by his investigation was that the trouble occurred in only two closely associated households out of eighteen served from the same dairy, which would indicate that the milk was infected in the household, and not at the dairy. As far as is known, this organism is entirely harmless, and the milk is objectionable only on account of its color.

BLUE SKY LAWS. As the result of the flotation of numerous fraudulent companies, and the swindling of innocent investors out of millions of dollars by sharpster investment companies, no fewer than twenty States have enacted what are known as "blue sky" laws, a name derived from a statement of a Kansas Bank Commissioner that certain companies were capitalizing the blue sky. The first, enacted by

Kansas in 1911, was due to the speculation in oil and gas companies. These laws aim to protect the investing public by requiring dealers in securities to secure a State license, and to file with some State authority information regarding stocks and bonds which they are handling.

Early in February the Federal District Court at Detroit declared the Michigan Blue Sky Law unconstitutional on the grounds of interference with interstate commerce and with the individual's right of free contract, and an unlawful extension of the police power of the State. The suit was prosecuted by the Investment Bankers' Association. Appeal was taken to the United States Supreme Court. In July the Iowa statute was declared unconstitutional on the ground of interference with interstate commerce and discrimination against the residents of other States.

In other decisions the West Virginia law also was declared unconstitutional, while those of Florida and Arkansas were upheld. The United States District Court declared the West Virginia law unconstitutional because in depriving individuals of the right to sell stocks, bonds, and securities it deprived them of property without due process of law. The decision held moreover that the law denied the plaintiffs the equal protection guaranteed by the Fourteenth Amendment; that it imposed burdens on interstate commerce; and that it vested powers in the State Auditor in violation of the West Virginia Constitution. There was, however, in this case a dissenting opinion which held the law constitutional since it was intended to apply only to corporations and not to individuals; since it did not restrict the borrowing or lending of money, but only regulated the business of corporations selling securities; and since it fulfilled important public services, and prevented frauds and impositions.

The Florida law was upheld by the State Supreme Court primarily owing to a section which excluded from the operation of the law any seller of securities who had become their bona fide owner prior to sale. The Arkansas law was upheld in the Federal District Court in a case brought by an investment company floating its own securities on quasi-deposit contracts. The court held that grounds for unconstitutionality such as were advanced in the West Virginia case did not apply because the complainant was not engaged in the sale of stocks, bonds, and other securities. The Iowa and Michigan laws were declared unconstitutional on grounds similar to those found in the West Virginia case.

BOILERS. One of the tendencies noted during the year was the firm establishment of the practice of forcing boilers to double or even triple their rating to carry the peak load, especially at large generating plants. Once it was customary to provide a boiler horsepower for every kilowatt of generating capacity, but now at the larger stations a ratio of 1 to 4 is common. In the large generating plant of the United Electric Light and Power Company at 201st Street, New York, officially put in commission on Jan. 31, 1914, one boiler horsepower was expected to care for 4.7 kilowatts, while at the Waterside Station, No. 2, the ratio of boiler horsepower to installed generating capacity was 1 to 4, and in emergencies at the Edison Company at Delray, Detroit, one boiler horsepower would supply 5.65. Such use depends largely upon the quality of the feed water, and at some of these large stations the use of distilled water was being considered so as to prevent scale forming or the effects of suspended matter. Naturally forced draught must be used to a great extent in such installation. Among the notable boiler constructions of the year was a 1280-horsepower Keeler water tube boiler for the Nichols Copper Company, Long Island City, while there was being installed at the new Connors Creek station of the Detroit Edison Company a Stirling boiler rated at 2350 boiler horsepower. A new sectional water tube boiler was perfected during the year by A. Venning of Preston, Ontario, in which the novel feature was a large circulating pipe to convey all of the water from each drum to the bottom of the header sections, while T. T. Parker in New York adopted a cross section water tube boiler with several new features. During the first half of the year 1914 there were reported 340 boiler failures, in which 120 were given as killed, and 240 injured. In 80 cases the monetary loss was reported as $246,000, making an average of about $3000. The greatest loss, $100,000, resulted from fire following a boiler explosion. In power-plant explosions, 60 were due to failures, and 30 to cast-iron headers in water tube boilers, and in 17 giving way of blow-off pipes. Cast-iron heating boilers were found to be a considerable menace, and should receive increased attention.

At the annual meeting of the American Society of Mechanical Engineers, held in New York City in December, a committee of the society presented a proposed code for the construction and installation of steam boilers, which had been drafted after an elaborate study of the subject, which had consumed some three years. This preliminary draft was submitted to the annual meeting for discussion, being the basis for a final report, which will contain a code to be recommended to the various State Legislatures for enactment into law, to govern the construction and installation of steam boilers, which would secure harmony and uniformity throughout the United States. State legislation on the subject of boilers was in force in Massachusetts, and it was the idea of the committee that the code framed, and further State legislation based on it, should be along similar lines. The report of the committee was criticised somewhat as providing too much detail, which with the development of modern scientific construction might become obsolete, but at the same time, inasmuch as numerous States were anxious and ready to pass legislation governing the construction of steam boilers, and to secure not only uniformity but the best and most reasonable practice, it aroused considerable interest. The problem was considered one of considerable complexity, as the Federal government has jurisdiction over the construction of steam boilers used in vessels, and over boilers of railway locomotives, while various standards have figured in the legislation of the different States, and differences in materials have proved embarrassing to various boiler-makers.

BOKHARA. A Russian vassal state in central Asia. Area, about 83,000 square miles, with a population estimated at 1,500,000. The capital is Bokhara, with about 75,000 inhabitants; Karshi has about 25,000; Khuzar, about 10,000. There is a large annual import of green tea, mostly from India, and an export to India of raw silk. Other products are corn, tobacco, hemp, and livestock. An ameer is the native ruler—Sayid Mir Alim Khan in 1914.

BOLIVIA. A South American republic. The seat of government, executive and legislative, is La Paz; the Supreme Court site at Sucre.

AREA AND POPULATION. Varying estimates are given for the area of Bolivia. In 1911, the *Boletín de la Oficina Nacional de Estadística*, published at La Paz, stated the area at 1,379,014 square kilometers (532,437 square miles), and the estimated population (at the end of the fiscal year 1910) at 2,265,801. In 1912, the director-general of the *Oficina Nacional de Estadística* stated that the area of the republic, inclusive of disputed territory, was 1,458,034 square kilometers (562,047 square miles). An estimate of the population in 1912 was 2,450,000; the 1911 estimate was 2,267,935. The 1900 census returned 1,744,568 inhabitants, of whom 50.9 per cent were Indian, 26.7 mestizo, 12.7 white, 0.21 negro, and 9.4 unclassified. The larger towns include La Paz, with about 95,000 inhabitants (another estimate is 82,000); Cochubamba, 30,000; Sucre, Potosí, and Oruro, each about 25,000; Santa Cruz, 21,500; and Tarija, 8000.

PRODUCTION AND COMMERCE. Agriculture in Bolivia is of little commercial importance. The estimated area under cultivation is about 4,940,000 acres, producing corn, rice, barley, beans, potatoes, etc.; coffee, cacao, coca, and quina are also produced. Large quantities of rubber are gathered, especially in the north; rubber stands second in value among the country's products, tin being first. It is upon tin and other minerals, particularly silver, bismuth, copper, and gold, that Bolivia's prosperity largely depends. In output of tin ore, Bolivia ranks next after the Federated Malay States.

Imports and exports have been valued as follows, in thousands of bolivianos:

	1908	*1909*	*1910*	*1911*	*1912*	*1913*
Imports	.38,069	36,937	48,802	58,871	49,509	.....
Exports	.58,924	68,764	74,567	82,681	90,123	93,722

The principal classified imports in 1911 were: Mineral products and manufactures, 19,992,494 bolivianos; vegetable products and manufactures, 12,497,512; animal products and manufactures, 9,081,844; textiles and manufactures, 7,219,180; machinery, hardware, etc., 2,554,661; beverages, 2,191,838; arms and explosives, 2,026,415. Classified exports in 1912 and 1913, respectively, are reported as follows: Raw or slightly wrought material, 83,537,025 and 90,000,808 bolivianos; gold and silver, including coin, 6,182,379 and 2,954,436; manufactures, 256,074 and 621,199; live animals, 121,771 and 117,310; food products and beverages, 25,738 and 27,760; total, 90,122,987 and 93,721,513. The table below shows in bolivianos the value of Bolivia's exports in 1910, 1911, and 1912:

	1910	*1911*	*1912*
Tin	37,006,504	52,639,603	60,288,197
Rubber	26,825,231	18,921,192	15,508,721
Silver	5,264,441	4,587,746	4,308,329
Copper	1,788,072	1,426,948	3,389,176
Bismuth	1,966,595	2,218,051	2,150,042
Gold coin	7,188	....	1,297,875
Coca	420,105	511,051	736,290
Wolfram	141,629	231,188	519,705
Silver coin	5,501	791,508	432,400
Zinc	485,009	872,490	829,995
Cattle hides	218,163	259,182	275,768
Lead	700	23,546	214,977
Gold	....	94,907	144,275
Total, including other	74,566,556	82,681,172	90,122,988

Imports and exports by countries, in thousands of bolivianos:

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
Germany	10,311	16,514	10,998	11,201
United Kingdom	12,470	9,070	59,582	66,954
United States	9,865	4,595	627	392
Chile	9,837	3,982	411	350
Peru	2,759	3,781	22	954
Argentina	3,220	3,029	454	698
Belgium	4,064	2,571	3,760	3,539
France	2,832	2,436	6,751	5,472
Total including other	58,871	49,509	82,631	90,123

COMMUNICATIONS. According to the Bolivian *Boletín de la Dirección General de Estadística*, published in 1914, railways in operation in the latter part of 1913 aggregated 1292 kilometers (803 miles), distributed as follows: Antofagasta-Oruro (without branches), 922 kilometers, the length of the Bolivian section being 482 km.; the branch line Unyuni-Huanchaca, 38 km.; Viacha-Oruro, 202 km.; Guaqui-La Paz, 98 km.; the tramways Cochabamba-Vinto-Cliza, 57 km.; Río Mulatos-Potosí, 174 km.; Arica-Alto de La Paz, 439 km., the length of the Bolivian section being 233 km.; the branch from this last line to Corocoro, 8 km. Lines under construction, aggregating 605 km. (376 miles), were: Oruro-Cochabamba, 195 km.; Unyuni-Tupiza, 194 km.; Viacha-La Paz (via el Kenko), 29 km.; the tramway Cliza-Arani, 19 km.; Machacamarca-Uncía, 83 km.; Guajaramerim-Riberalta, 85 km. The last-named line is in the extreme north, Guajaramerim being the Brazilian southern terminal of the Madeira-Mamoré Railway. Lines for which surveys had been made were: La Quiaca-Tupiza (93 km.); and Puerto Suárez-Santa Cruz (683 km.). La Quiaca is an Argentine town on the frontier; Puerto Suárez is a Bolivian town on the eastern frontier. In addition, the length of projected lines and partially surveyed lines was estimated at 2573 km.

The principal line is the one extending from Antofagasta, on the Chilean coast, to the frontier town Ollagüe (440 km.), and thence through Uyuni, Río Mulatos, Challapata, Poopó, and Machacamarca to Oruro (482 km.). At Oruro, connection is made for Viacha (202 km.); Viacha is also on the Guaqui-La Paz line, and the line from Arica; the distance from Viacha to Alto de La Paz is 23 km., and thence by electric, to La Paz, 8 km. The distance from Viacha to Guaqui, on Lake Titicaca, is 65 km. Steamers connect with Puno, on the Peruvian shore of the lake, whence there is rail communication by way of Juliaca and Arequipa with the Peruvian port Mollendo. The distance from La Paz to Antofagasta is 1155 km., from La Paz to Mollendo 861 km., and from La Paz to Arica 447 km. These lines reach very great altitudes; the elevation of Alto de La Paz is stated at 4089 meters, of Viacha 3919, of Charaña 4059, of Oruro 3703, of Ríos Mulatos 3806.

The estimated length of navigable rivers in

Bolivia is 18,220 kilometers. Telegraphs in 1912: lines, 6133 km.; wire, 8951; offices, 194. Post offices, about 200.

FINANCE. The monetary unit is the boliviano, par value 38.932 cents; that is 12.5 bolivianos are equivalent to one pound sterling. For the fiscal year 1914, the estimated revenue and expenditure were 25,263,500 and 25,258,450 bolivianos, respectively. The estimated revenue for the fiscal year 1913 was 22,073,500 bolivianos, including import duties 10,387,000, export duties 4,971,500, and imposts 2,444,500. The larger departmental expenditures for 1914 were estimated as follows: Commerce and finance, 8,496,435; war and colonization, 5,070,629; interior and fomento, 4,055,045; public instruction and agriculture, 2,650,979. Public debt (1913): Foreign, £473,600 (loan of 1908), £1,491,750 (1910), £1,000,000 (1913); internal, 5,467,610 bolivianos; floating, 5,542,283 bolivianos.

ARMY. A permanent force of 3153 officers and men is maintained under the provisions of the law of Feb. 5, 1910, and military service from the 20th to the 50th year is compulsory. The army is organized on a militia basis, where five years is spent in the national army, with about one year in the ranks, after which five years is spent in the ordinary reserve, ten years in the extraordinary reserve, and finally ten years in the National Guard. The active army is formed in six infantry battalions, one cavalry regiment, one battery of field artillery, and one of mountain artillery. In addition there are small bodies of infantry at the chief towns of departments which can be expanded from companies or *columnas* into battalions, and two squadrons of cavalry serving in Gran Chaco. The infantry is armed with the 1898 Mauser rifle, and the artillery has modern field and mountain batteries from European ordnance works.

GOVERNMENT. The executive power is vested in a president who, with two vice-presidents, is elected by direct vote for four years, and is ineligible for the next term. The president is assisted by a cabinet of six ministers. The legislative power rests with a congress of two houses, the Senate and the Chamber of Deputies. Senators (16 in number) and deputies (75) are elected by direct vote, the former for six years and the latter for four. The president for the term beginning Aug. 14, 1909, was Eliodoro Villazón. His successor was Ismael Montes, inaugurated Aug. 14, 1913. First vice-president, Juan M. Saracho; second vice-president, José Carrasco.

On Feb. 21, 1914, the mining town of Challapata was completely destroyed, and many persons were killed by the explosion of 3500 cases of dynamite. See INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

BOOTS AND SHOES. The boot and shoe industry during the year 1914 was complicated like other American manufacturing industries by the great European war. Foreign nations were in the American market for army footwear, and where they were not, their own factories were at work on such products, with the result that the usual output was curtailed, and it was believed that recourse must be had to American goods. This was especially true in Great Britain, where the British shoe industry was practically commandeered to make army shoes, and it was estimated that 50 per cent of the factories were so engaged. Shoe leathers were imported largely from the United States, and American upper stock in particular was used. German box calf leather, which had been rather favored by the Admiralty supply department, was excluded from the specifications for heavy shoes. England was also a purchaser in the American markets, but not to the extent that the French and other continental governments were, the French government in December placing an order for 500,000 pairs of army shoes with a large New England manufacturer. All Europe apparently was in quest of American boots and shoes, but the method of doing business in many cases proved unsatisfactory to American manufacturers and dealers, not only in boots and shoes, but in leather and other supplies. There was considerable discussion of the accusation of graft on the part of purchasing agents and inspectors, and the usual evils incident to the purchase of vast quantities, where speedy deliveries rather than quality and price were conspicuous, naturally were in evidence. It was said that a pair of shoes lasts a soldier engaged in actual warfare but one month, so that shoes and shoe leather were naturally an important military supply, which had to be considered.

In the American industry the manufacture of shoes, especially for women, was running more and more to styles, so that the retail trade so far as women were concerned was becoming more and more a "millinery" business in which style and ornament had to be considered. Where in previous years shoes for dancing had figured prominently in the retail business, now ornamental styles, especially with cloth tops, fancy buttons or with fancy buckles, were more largely manufactured, and naturally introduced into the business the various hazards where style or styles must be considered. This increased use of cloth tops had its economic effect in the existing shortage of leather as well as increasing a demand for certain cloths for this purpose.

BOSNIA AND THE HERZEGOVINA. Provinces, formerly Ottoman, annexed to the Austro-Hungarian monarchy Oct. 5, 1908. The provinces are administered by the Austro-Hungarian ministry of finance; seat of local government, Sarajevo, in Bosnia. The area of Bosnia is 16,239.4 square miles, and of the Herzegovina 3528.5 square miles; total, 19,767.9 square miles. Population according to the census of Oct. 10, 1910: Bosnia, 1,631,006; the Herzegovina, 267,038; total civil population, 1,898,044; in addition, the military population numbered 33,758, making the total number of inhabitants 1,931,802, as compared with 1,591,036 in 1905. Estimated population at the end of 1912, 1,962,411, of whom 626,649 were Mohammedan, 856,158 Servian Orthodox, 451,686 Roman Catholic, 8605 Greek Catholic, 6734 Protestant, and 12,798 Jewish. The larger towns are Sarajevo, with 51,919 inhabitants in 1910; Mostar, 16,392; Banjaluka, 14,800; Tuzla, 11,333; Bjelina, 10,061; Srebrenica, 7215; Brčka, 6647; Travnik, 10,061.

Elementary schools in 1910 numbered 458, with 41,130 pupils; in addition, 1970 Mohammedan mektebs, with 64,805 pupils, and 94 reformed mektebs, 7719 pupils. In 1912 the elementary schools had increased to 544. There were in 1912, 6 gymnasia, 2 realschulen, 3 training colleges for teachers, 11 advanced schools for girls, and various technical and professional institutions.

The soil is fertile, but agriculture is not highly developed. Minerals are abundant, including lignite, iron, copper, manganese, and chrome ore. Railway open in 1912, 1215 miles; telegraph lines, 1972 miles, with 4193 miles of wire; post offices, 222.

BOSTON FIRE PROTECTION. See FIRE PROTECTION.

BOSTON UNIVERSITY. An institution of higher education, founded under the auspices of the Protestant Episcopal Church in Boston, in 1869. The total enrollment in the several departments in the autumn of 1914 was 2004, with a faculty numbering 170. The changes in the faculty included the appointment of Arthur H. Wilds, Ph.D., professor of education, and Charles P. Huse, assistant professor of social science. There were no noteworthy benefactions received during the year. The productive funds of the university amount to about $2,478,047, and the annual income to about $220,000. The library contains about 86,000 volumes, but the university adjoins the Boston Public Library, and has the benefit of its collections. The president is Lemuel H. Murlin, D.D.

BOTANY. The American Association for the Advancement of Science with the affiliated Botanical Society of America, the American Phytopathological Society, and others, met in Philadelphia, Pa., Dec. 29, 1914, to Jan. 2, 1915. The Society of American Bacteriologists met at Toronto, Canada, Dec. 31, 1913, to Jan. 2, 1914. The meeting of the British Association for the Advancement of Science was held in Australia in August, 1914, and the French Association at Havre, July, 1914. The annual meeting of the German Society for Plant Breeding was held late in 1913. An International conference on phytopathology was held in Rome, Feb. 24 to March 4, 1914.

Among the botanists of note to die during 1914 were Dr. W. W. Bailey, emeritus professor at Brown University, R. I.; M. C. Cooke, the British mycologist; P. van Tieghem, botanist and permanent secretary of the Academy of Sciences, Paris; Dr. J. Reynolds Green, University of Liverpool; Dr. S. M. Jorgensen, director Carlsbad Laboratory, Copenhagen; and Dr. B. Lidforss, University of Lund. Dr. Jacob Eriksson retired from the directorship of the phytopathological station at Stockholm, Sweden. Dr. F. L. Stevens was appointed professor of plant pathology at the University of Illinois. Dr. T. H. McBride, long professor of botany at the University of Iowa, was promoted to the presidency of that institution. A new journal, the *American Journal of Botany*, was launched during the year. It is published jointly by the Brooklyn Botanical Garden and the Botanical Society of America. *Revue Phytopathologie Appliquée*, a journal devoted to plant diseases, also began publication.

Among the legislative acts of botanical importance was the adoption of a convention by the Phytopathological Conference at Rome regarding the control of plant diseases and insect pests. This convention has been referred to the various supporting governments for ratification. Thirty-seven countries have organized for the control of plant diseases and other pests. Japan recently adopted a strict quarantine of nursery plants, fruits, etc. The Federal Horticultural Board continued to enforce the Federal Plant Quarantine act, which was amended in some minor respects during the year. On account of the presence of powdery scab of potatoes (*Spongospora subterranea*) a quarantine against part of Maine was declared. The disease was also reported in New York late in the season. The presence of a serious disease of citrus trees, citrus scab, was reported throughout the Gulf States, and a quarantine against the importation of all forms of citrus nursery stock was promulgated Dec. 10, 1914. A deficiency appropriation of $35,000 was made by Congress to combat this disease. Congress made an appropriation of $70,000 to study the chestnut tree blight, but the active campaign in Pennsylvania and elsewhere for its control has been abandoned.

PLANT BREEDING. Bateson, in the presidential address before the British Association for the Advancement of Science, reviewed the evolutionary aspects of genetic research and claimed that variation in a series is due to loss of factors and not the acquisition of new ones. DeVries has added to his contributions on mutations and reports many forms of wild and cultivated plants due to mutation. Waterman claims mutations observed by him in molds were limited by substances in the culture media. Atkinson produced Œnothera hybrids that were constant from the first generation. A mutation of Cuban tobacco was described by Hayes and Beinhart. Hayes has reported that the inheritance of size, shape, and number of leaves in tobacco is determined by a number of factors of fluctuating variability. Emerson has offered an explanation of the inheritance of variation in variegated maize. Van Fleet has shown that second generation crosses of Asiatic and American chestnuts are practically resistant to the chestnut bark fungus. Jeffrey found that spontaneous hybridization is of very common occurrence among angiosperms. Nilsson-Ehle, from a study of variation in chlorophyll content of cereals, found it to be recessive to normal green color, confirming Emerson's claim regarding variation in leaf color of maize. He also claims that yellow is correlated with awnless oats, and white and black with the presence of awns. Daniel has given another report on his studies on xenia in beans. Harris found that weight of beans was correlated with the time required for their germination. McCall and Wheeler have shown that ear characters in maize are not correlated with yield. Jenesco reports having succeeded in obtaining only 35 rye-wheat hybrids out of over 6000 cross pollinations.

PLANT PHYSIOLOGY. Bose claims that nervous impulse in plants is fundamentally identical with that in animals. Lubimenko and Monteverde have announced the belief that chlorophyll production involves the convertion of leucophyll into chlorophyllogen and this acted upon by light yields chlorophyll. Iwanowski claims the remarkable stability of chlorophyll can be explained only by reason of its colloidal nature. Warner disputes the photosynthesis of carbon dioxid outside the plant, and Wager found the aldehyde formed by chlorophyll under the influence of light to be a decomposition product and not a direct result of photosynthesis. Baudisch claims nitrogen assimilation in plants is a photochemical process, inorganic nitrogen in the presence of formaldehyde being converted into complex nitrogen compound under the action of light. Darwin has shown that transpiration does not cease in a saturated atmosphere. Light is held to influence transpiration through its warming effect on the chloroplasts or through rendering the plasma membrane more permeable. Janse claims the protoplasmic contents of the cell function in promoting the transpiration current. Hasselbring in studies of tobacco found that the amount of salts absorbed is independent of the rate of transpiration. Dachnowski claims that the amount of transpiration cannot be considered an index of the metabolism of plants. Duggar and Cooley found the effect of a film of Bordeaux mixture on plants was to increase transpiration. Briggs and Shantz have continued their studies on the water requirements of plants. Atwood studied the after-ripening of oats and found the process involved an increased permeability of the seed coats to oxygen and a rise in the acid content of the embryo. Shull claims that oxygen supply is the limiting factor in the germination of Xanthium seeds. Mlle. Promsy found the germination of seeds in fleshy fruits was hastened by a weak acidity such as brought about by the decay of the fruits. Appleman reports the rest period of potato tubers could be modified by various agencies. Baar found that certain species of seed germinating best in light while fresh were materially hastened by germination in darkness when old. Crocker and Davis have shown that seeds of various aquatic plants retain their vitality for years in an imbibed condition.

The stimulating effect of low or moderate radio-action substances on plants has been shown by Stoklasa, Malpeaux, and others. It also appears to favor nitrification of soils and hence increased fertility. Knight and Priestley believe the increased growth of plants under electrical stimulation is due probably to a rise in temperature and not increased respiration. Schikorra was unable to find the stimulating effect of high tension brush discharges on plant growth claimed by Vozory. The relation of various elements and compounds to plants has been investigated and continues to be a subject of investigation. Osterhout has given additional evidence relative to antagonisms of certain salts in plant cultures. Hubbard found chloral hydrate antagonistic to copper sulphate, Caldwell described the antagonistic effect of solutions of six paired salts, and Miyake found many salts that were injurious to plant life when used singly lost their toxic effect when employed in combination. Faack claims that calcium has a protective effect on plant tissues and that it also influences the distribution and localization of carbohydrates in plant organs. Haselhoff reports that he was unable to find any indication of a definite ratio of calcium to magnesium, as claimed by Loew. True called attention to the harmful effect of distilled water to plants, the injury being caused by the extraction of electrolytes and other substances from the cells. Dixon claims the dying of leaves beyond a steamed portion of a branch is due to the formation of poisonous substances in the sap. The wilting of the leaves is due to the plugging of the water channels. According to Fisher, a marked increase of carbon dioxid in the air causes a greater body growth, earlier and more abundant flowering and fruit production in naturally sterile hybrids. The presence and function of oxidases in plants has been treated of in contributions by Armstrong, Atkins, Bunzel, and others. McCool found the stimulating effect of ether on bulbs and tubers was due to the activation of the diastase they contain. Jorrisen demonstrated that hydrocyanic acid may be derived from citric acid acted upon by sunlight in the presence of traces of iron salts, and suggests that possibly the formation in plants takes place in a somewhat similar manner. Raybaud found that while hydrocyanic acid occurs in considerable quantity in young sorghum and millet plants in India it migrates toward the upper part of the plant and finally disappears as the grain reaches maturity. Combes claims to have experimentally produced in leaves a substance identical with anthocyanin and that the process is one of reduction and not oxidation.

MISCELLANEOUS. Maximow states that the injurious effect of freezing on plants is due to physical and chemical changes in the plasma colloids. Shreve claims the distribution of certain succulent plants is limited by the number of hours they are able to withstand temperatures below freezing and not the minimum temperature during that time. Kearney and others have reported upon the indicator value of plants in determining the possible agricultural value of soils. Tanret has claimed there is a plurality of starches, as many respond very differently to various agents, and Reichert, from a stereochemical study of the starches of a large number of plants, arrived at the conclusion that starches could be used as a basis for plant classification. Koketsu claims that laticiferous tissue in plants has an ecological rather than a physiological significance. Sartory and others have followed up the work of Bernard on the effect of fungi on tuberization and have found that they do exert an important rôle in the formation of potato tubers. McDougal has added to our knowledge of mycorrhiza on forest tree roots and has reported four additional species which form mycorrhiza on roots. Schramm claims, as a result of his experiments, that in general algæ are without the ability to fix free atmospheric nitrogen in the complete absence of combined nitrogen. Mameli and Pollacci reject the theory of Jamieson regarding nitrogen assimilation through special trichomes on plants, but they find the function common to many plants, the assimilation of the nitrogen being connected with chemical changes that take place within the cell. Lyon and Bizzell claim certain plants are mutually benefited by having other species grown with them, but Westgate and Oakley found no appreciable gain in the protein content of plants grown in immediate association with leguminous plants.

PLANT DISEASES. There has been great activity among botanists during the year in studying parasitic fungi and plant diseases. On account of the extensive use of tar and similar products in road construction, investigations have been made of its possible injurious effect on plants, and Claussen found the injury was proportional to volatility and temperature. Gatin claims that strong sunlight increases the amount of damage done. The effect of smoke, dust, and gases from industrial works is being investigated, and in this country Anderson found dust from cement works prevented the setting of fruit to a distance of two miles or more. Hedgcock found the injury from smelter smoke in Tennessee to be extending over a considerable area.

Lipman claims poor nitrification in soils is a cause of die-back in citrus trees in California. Bunzel found curly dwarf in potatoes associated with increased oxidase activity. The relation of rust fungi to their host plants is receiving much attention and life histories and biological forms have been described by Arthur, Kern, Tranzschel, Fraser, and others. Studies of Fusarium have been published by Wollenweber in which a classification of many of the species is given. A considerable number of cereal diseases that have been considered of minor importance in Europe have recently become destructive, judged by the attention given them in literature. Among them are the leaf stripe, stem or foot rot, snow disease, etc. Bolley, Milbrath, and others have added to their previous publications relative to soil-borne diseases of cereals. Beauverie reports finding rusts of grains and wild grasses carried by the seed. The stinking smut of wheat was unusually prevalent in Washington and Idaho, and evidence has been obtained showing the fungus may pass the winter in the soil to some extent. The timothy rust is said to have become destructive especially in North Dakota and Wisconsin.

The chestnut bark fungus, *Endothia parasitica*, is continuing to be studied, but the campaign for its control has been almost abandoned. The presence of the disease in British Columbia was announced. Late in 1913 several cases of poisoning in Connecticut were referred to eating diseased chestnuts, but Clinton seems to have shown the presence of the fungus in no way contributed to the illness. Forest tree disease studies have been contributed by Long, Hedgcock, Weir, Spaulding, and others. The white pine blister rust has been reported in some new localities and Spaulding found *Pinus excelsa* to be a host of the fungus. The oak mildew in Europe has been recently found upon the American red oak, a species hitherto thought immune. Among fruit tree diseases peach leaf curl and pear blight have both been especially severe during the year. The blight was unusually prevalent on apple trees in the Northwestern States. From a note by Passy it appears that pear blight has made its appearance in France. One of the most serious of the new diseases during 1914 was the citrus scab, a disease thought to be of Japanese origin that has made its appearance in all of the Gulf States. While all kinds of citrus trees are subject to attack, grapefruit trees appear to suffer most injury. Cobb has described a nematode disease that appears to be present in all important citrus-producing countries. A new disease of strawberries was reported by Stevens. On account of the seriousness of potato diseases in Europe and the quarantine against the importation of potatoes into this country, studies have been made of the diseases of that crop in this country, and the powdery scab has been found in Maine and two or more localities in New York. A new storage rot due to a species of Phoma was found by Melhus in Maine. Wilt diseases, caused by species of Fusarium and Verticillium, have been reported in various parts of the United States. Wollenweber, Taubenhaus, and others have been studying the diseases of sweet potatoes and have found many new organisms associated with the diseases. Brooks claims the blossom end rot of tomatoes is caused by overmaturing or heavy fertilizing. A new disease of hemp was described by Charles and Jenkins. O'Gara reports alfalfa blight and canker in Utah. Johnson described two diseases of tobacco in Wisconsin and he considers diseases and not soil depletion the cause of tobacco failures in Wisconsin and Canada.

In the control of plant diseases most of the experiments have been on the modification or extension of treatments already known. The use of dilute sulphuric acid for sterilizing seed beds has been reported by Hartley, Merrill, and others. The modified hot water treatment of grain for smut prevention continues to give excellent results and it has also been found to reduce the stripe disease of barley. Butler has published the results of a physico-chemical study of Bordeaux mixture and he has given some practical suggestions for making and storing that important fungicide. The formaldehyde gas treatment for the control of potato scab has been found injurious if used in too great an amount in proportion to the quantity of tubers treated. A large number of successful spraying experiments have been reported, indicating still more strongly the economic value of such treatments.

Bibliography. Among books on botany to appear were the following: Bergen and Caldwell, *Introduction to Botany* (New York, 1914); E. Bourcart, *Insecticides, Fungicides, and Weed Killers*, trans. by D. Grant (London, 1913); F. E. and E. S. Clements, *Rocky Mountain Flowers* (White Plains, N. Y., 1914); M. T. Cook, *The Diseases of Tropical Plants* (London, 1913); J. B. Davy, *Maize, Its History, Cultivation, Handling and Uses* (London, 1914); W. B. Grove, *The British Rust Fungi* (Cambridge, 1913); G. Haberlandt, *Physiological Plant Anatomy*, trans. by M. Drummond (London, 1914); K. Heyne, *De Nuttige Planten van Nederlandsch-Indie* (Batavia, 1913); M. Hollrung, *Die Mittel zur Bekampfung der Pflanzenkrankheiten* (Berlin, 1914); L. Jost, *Vorlesungen über Pflanzenphysiologie* (Jena, 1913); F. Löhnis, *Vorlesungen über Landwirtschaftliche Bakteriologie* (Berlin, 1913); L. Mangin, *Parasites Vegetaux des Plantes Cultivées* (Paris, 1914); G. and I. Massee, *Mildews, Rusts, and Smuts* (London, 1913); Neueu-Lemaire, *Parasitologie des Plantes Agricoles* (Paris, 1913); Piper and Beattie, *Flora of Washington and Adjacent Idaho* (Lancaster, Pa., 1914); E. F. Smith, *Bacteria in Relation to Plant Diseases*, vol. iii (Washington, 1914); G. Truffaut, *Les Ennemies des Plantes Cultivées* (Paris, 1913).

BOWDOIN COLLEGE. An institution for higher education at Brunswick, Me., founded in 1794. The student enrollment in the autumn of 1914 numbered 394, and the faculty numbered 29. There were no notable changes in the faculty during the year. There was received from the Drummond bequest the sum of $80,000. The productive funds at the end of the year amounted to $2,312,552, and the income to $138,501. The library contained about 110,000 volumes. The president is William De Witt Hyde, S.T.D.

BOWLING. The bowling season of 1914 was made notable by the success that attended the Eastern devotees of the game. The East captured two of the American Bowling Congress titles at Buffalo and only one Westerner, William Miller of Detroit, made a creditable showing. He won both the individual and all-around titles. The best two-men team of the year comprised D. H. Van Ness and John Negley of the Roseville A.A. of Newark who compiled a total score of 1245. The Monko team of New Haven with a total of 2944 led the way for the five men honors. The Genesee Five of Rochester established a world's record in bowling 3,025, excelling the former mark of the Flor de Knispels of St. Paul by 29 pins.

Jimmy Smith of Brooklyn made the best individual showing throughout the year and for the second time in succession won the National all-around championship. The National Bowling Association at its convention held in Atlantic City passed upon the "loaded" ball question. After a long discussion the association adopted regulations whereby a ball may be made of anything so long as it is not balanced "off the centre" more than three ounces, the allowance for the boring of the finger holes.

The winners of the principal tournaments of the year were as follows: National Bowling Association—All-around, James Smith, Brooklyn, 1917; individual, Harry Krauss, Washington, 678; two-men, Glenn Riddell and Harold Horton, New York, 1333; five-men, Genesee, Rochester, 3035.

American Bowling Congress—All-around, William Miller, Detroit, 1897; individual, William Miller, 675; two-men, D. H. Van Ness and John Negley, Newark, N. J., 1245; five-men, Monko, New Haven, 2944.

BOWMAN, Thomas. An American bishop of the Methodist Episcopal Church, died March 3, 1914. He was born in Berwick, Pa., in 1817, and graduated from Dickinson College in 1837. He read law for one year and in 1839 entered the Methodist Episcopal ministry. From 1840 to 1843 he was a tutor at the Dickinson Grammar School. In 1848 he organized, and from that year until 1858 was president of, Dickinson Seminary, Williamsport, Pa. From 1858 he was president and professor of mental and moral philosophy at Asbury (now DePauw University). From 1867 to 1872 he was Hannon Professor of Biblical Literature at this university, from 1884 to 1889 chancellor, and from 1899 until his death chancellor emeritus, of this university. In 1864 he was chosen chaplain of the United States Senate and held this post for two years. During this time he became the warm friend of Abraham Lincoln. In 1862 he was elected bishop of the Methodist Episcopal Church and eventually became senior bishop of that denomination. He retired from active service in 1896. As bishop he attended conferences in Europe, India, China, Japan, and Mexico and dedicated more than a thousand churches in various parts of the world. As a preacher he was especially noted for his appeals to young men.

BOXING. There were three upsets in the boxing world in 1914. Willie Ritchie, holder of the lightweight title, went down to defeat at the hands of Freddie Welsh, the English boxer; Johnny Coulon of Chicago, who for years had reigned supreme among the bantamweights, bowed to "Kid" Williams of Baltimore, and Al McCoy of Brooklyn gained the middleweight title by his defeat of George Chip. In heavyweight circles Jack Johnson successfully defended his title against Frank Moran, whom he defeated in a twenty-round bout in Paris. Johnson has since been matched to fight Jess Willard.

Boxing enthusiasts received a shock during the year as a result of the repeal of the law permitting bouts in California. The Pacific Coast State had been regarded as the strongest citadel of the sport.

The championships of the A. A. U. were held at Boston, April 17–18. The results of the final bouts were: 108-pound class, J. Downs of the Cleveland A. C. defeated L. Evin of the Union Settlement A. C., New York; 115-pound class, S. Phillips of the Boston Y. M. C. U. defeated N. McLatchey of Cambridge, Mass.; 125-pound class, V. Pokorni of the Cleveland A. C. defeated J. J. Sullivan of the Atlantic A. A. of Boston; 135-pound class, D. Stosh of the Cleveland A. C. defeated W. Buckley of Chelsea, Mass.; 145-pound class, M. Woldman of the Cleveland A. C. defeated P. McCarthy of Roxbury, Mass.; 158-pound class, W. Barrett of the Pastime A. C., New York, defeated C. J. Seegest of the Cleveland A. C.; 175-pound class, W. Hanna of the Riverside A. C., Toronto, defeated A. Sheridan of the Trinity Club, Brooklyn; heavyweight class, P. L. Kelly of Roxbury, Mass., defeated A. Sheridan of the Trinity Club, Brooklyn.

BOYCOTT. Danbury Hatters Case. This famous case came for the second time before the Supreme Court in the early part of the year. This case grew out of a strike in July, 1902, by the Union Hatters of North America against Loewe and Company of Danbury, Conn., the purpose of which was to maintain a closed shop. In the following year a suit was brought against Lawler and 239 associated members of the union for maintaining a boycott in violation of the Sherman Anti-Trust Law. The American Federation of Labor undertook the defense for the union, while the Anti-Boycott Society of America supported the prosecution. In 1908 the Supreme Court declared the boycott illegal and the company was ordered to sue for damages. A verdict of $74,000 was rendered by the United States District Court at Hartford late in 1909. This amount was tripled under the provisions of the Sherman Anti-Trust Law and the fine was to be levied upon the individual members of the union. Later the United States Circuit Court of Appeals set this verdict aside. It was then retried in the Hartford District Court where a decision for the plaintiff was rendered and $80,000 and costs were awarded. Towards the close of 1913 a judgment of this court was affirmed and total damages of $272,000 were awarded. The hearing by the Supreme Court was set for December 17 of last year, and the final decision was expected early in 1915.

Oklahoma Decision. An interesting decision was that handed down in the spring of 1914 by the Oklahoma Supreme Court Division No. 2, which upheld the right of the union to strike for a close shop and declared the compound labor boycott, or secondary boycott, which is usually considered illegal, to be legal.

BOY SCOUTS OF AMERICA. An organization founded in 1908 for the purpose of training boys between the ages of 12 and 18 in self-reliance, manhood, and good citizenship. Its growth has been remarkable and a substantial increase was made in membership during 1914. At the end of that year it was organized in practically every community of 4000 inhabitants in the United States. There are now over 8000 scout masters, nearly 3000 assistant scout masters, about 500 scout commissioners, and over 700 local councils. The organ of the society is *Boys' Life*. The officers are: Honorary president, Hon. Woodrow Wilson; honorary vice-presidents, Hon. William H. Taft, Hon. Theodore Roosevelt; president, Colin H. Livingstone; chief scout, Ernest T. Seton; national scout commissioner, Daniel Carter Beard.

BRACKENBURY, Sir Henry. An English soldier, died April 20, 1914. He was born in 1837 at Bolingbroke, Lincolnshire, and was educated at Eton and at the Royal Military Academy at Woolwich. He entered the Royal Artillery in 1856 and took part in the Central Indian campaign of 1857–58. Several years later he was selected to accompany the Society for Aid to Sick and Wounded with the Prussian Army in the War of 1870–71. His services were recognized by both the German and French Armies, and he returned to England with a reputation for efficiency. In 1873 he accompanied Sir Garnet Wolseley to the Gold Coast as assistant private secretary. He served with the latter in 1875 in South Africa, and later in the Zulu war and in the campaign against Sekekuni. In 1879 he was appointed Chief of Staff in South Africa and in this capacity served for one year, when he went to India as private secretary to the Viceroy. In 1881 he was appointed Military Attaché to the British Embassy in Paris, but after serving about a year he again joined Lord Wolseley in the Nile campaign of 1884–85. He accompanied General Earle as chief of staff of the river column, and after the latter's death at Kirbekan, the command of the column devolved upon him. For his services in this campaign he was promoted to the rank of major-general. From 1886–91 he was Director of Military Intelligence at the war office, and from 1891–96 was Military Member of the Council of the Viceroy in India. He continued in this office until he became President of the Ordnance Committee, and afterwards Director-General of Ordance. He held the latter appointment until his retirement in 1904. He was the author of several works dealing with military subjects.

BRADBURY, William Frothingham. An American educator and mathematician, died Oct. 22, 1914. He was born at Westminster, Mass., in 1829, and graduated from Amherst College in 1856. He became a teacher in Cambridge High School in 1856, and from 1881 to 1886 was head master of this school. In the latter year he was appointed head master of Cambridge Latin School, serving until 1910, when he was appointed head master emeritus. He published many text books dealing with mathematics and also patented a device for teaching the metric system, and a noiseless school desk.

BRADFORD, Royal Bird. A rear admiral (retired) of the United States Navy, died Aug. 6, 1914. He was born in Turner, Me., in 1844, and graduated from the United States Naval Academy in 1865. In the following year he was appointed ensign. From this time until 1885 he saw much sea service. In the latter year he began organizing a naval electrical department and superintended the installation of an electric lighting plant on the United States steamship *Trenton*, the first war vessel of any nation to use electricity. He commanded the *Bennington* on the coast of Chile, when war with that nation threatened, participated in the Columbus celebration in Italy in 1892, and in 1896 became a member of the board of inspection and survey. At the outbreak of hostilities between the United States and Spain he offered his resignation as chief of the bureau of equipment and asked for active service. He was left at the head of the bureau and President McKinley complimented him on the efficiency he displayed in supplying the fleet with coal in remote parts of the world. Admiral Bradford served later on many technical boards and also as a member of the general board of the navy on war plans. He received the rank of rear admiral in 1904 and was retired for age two years later.

BRADLEY, William O'Connell. A United States Senator from Kentucky, died May 23, 1914. He was born in Lancaster, Ky., in 1847, and was educated in the public schools. At the age of 14, when the Civil War broke out, he ran away from home and joined the Union Army, but on account of his youth his service was refused. In 1861 he acted as page in the lower house of the Kentucky legislature. At the age of 18 he was licensed to practice law in the State and Federal courts of Kentucky, and in the United States courts. In 1870 he was elected county attorney of Garrard County, and in 1872 and again in 1876 was Republican candidate for Congress, but was defeated. He was elected delegate at large to seven Republican national conventions, and in 1880 seconded the nomination of Grant. He defeated a motion to curtail southern representation in 1884, and in 1904 seconded the nomination of Roosevelt. He was three times elected a member of the Republican national committee. In 1888 he received 105 votes for Vice President in the national convention, and in 1896 was indorsed for President by the Kentucky State convention. In 1889 he declined an appointment as minister to Korea. He was elected Governor of Kentucky in 1895. Prior to 1908 he was four times nominated for United States Senator, and in February of that year was elected, although the General Assembly had a Democratic majority of eight. He was well-known as an eloquent speaker and was one of the most popular orators at national conventions. Only a few days before his death he made a speech of nearly three hours in opposition to the Panama Canal tolls repeal bill. This was considered to be a remarkably strong presentation of the case. He received the degree of LL.D. from Kentucky University. His term in the Senate expired on March 4, 1915. See Kentucky.

BRANNON, Melvin Amos. An American educator, elected in 1914 president of the University of Idaho. He was born in Lowell, Ind., in 1865 and graduated from Wabash College in 1889. From 1891 to 1894 he studied at the Marine Biological Laboratory at Woods Hole, Mass., and after teaching biology and the natural sciences in several institutions he was in 1894 appointed professor of biology at the University of North Dakota. From 1899 to 1911 he was dean of the school of medicine at that university and was dean of the College of Liberal Arts from 1911 to 1914, being elected president of the University of Idaho, April 1, 1914. Dr. Brannon took the degree of doctor of philosophy at the University of Chicago in 1912.

BRAZIL, United States of. A South American federal republic. The capital is Rio de Janeiro.

Area and Population. Estimates of both the area and the population of Brazil are considerably at variance. Among the estimates of area are 3,292,000 square miles, 3,301,155 square miles, and 3,280,900 square miles. The last figure is equivalent to 8,497,540 square kilometers, the result of a recent planimetric calculation by the University of Agriculture. The 1890 census returned 14,333,915 inhabitants, and the 1900 census 17,318,556; a 1913 estimate placed the number at 24,308,219. Some authorities regard the last figure as too large. The estimated area in square kilometers and estimated population by States, as officially published in 1913, are as follows (State capitals are shown in the last column):

	Sq. km.	*Pop.*	*Capitals*
Amazonas	1,894,724	500,000	Manáos
Pará	1,149,512	760,000	Belém
Maranhão	459,884	600,000	São Luiz
Piauhy	301,797	450,000	Therezina
Ceará	104,250	1,000,000	Fortaleza
Rio Grande do Norte	57,485	480,000	Natal
Parahyba	74,731	650,000	Parahyba
Pernambuco	128,395	1,650,000	Recife
Alagôas	58,491	800,000	Maceió
Sergipe	39,090	500,000	Aracajú
Bahia	426,427	2,560,000	São Salvador
Espirito Santo	44,839	430,000	Victoria
Rio de Janeiro	68,982	1,250,000	Nichtheroy
São Paulo	290,876	3,200,000	São Paulo
Paraná	251,904	570,000	Curytiba
Santa Catharina	43,535	510,000	Florianopolis
Rio Grande do Sul	236,553	1,750,000	Porto Alegre
Minas Geraes	547,855	4,850,000	Bello Horizonte
Goyaz	747,311	302,996	Goyaz
Matto Grosso	1,378,783	300,223	Cuyabá
Federal District	1,116	1,000,000	....
Acre Territory	191,000	195,000	....
Total	8,497,540	24,308,219	....

The urban populations of Brazil are so variously estimated that, until a census is taken, little dependence can be placed upon published figures. The official estimate for the city of Rio de Janeiro, Jan. 1, 1914, was 984,570.

The total number of immigrants to Brazil from 1820 to the end of 1913 is reported at 3,333,169. Immigration in 1913 was 192,684. The tendency for immigrants to settle in the Southern States, where the climate is most healthful, is shown in the fact that 78,208 disembarked at Rio de Janeiro and 110,976 at Santos. Of the total for 1913, the government assisted 63,023 financially in securing their passage to Brazil. The following table shows by nationalities the immigrants in 1912 and 1913, and the total number in the seven years 1907–13:

	1912	*1913*	*1907-13*
Portuguese	76,530	75,665	324,431
Spaniards	35,492	40,540	164,332
Italians	31,785	30,875	145,016
Syrians, etc.	7,302	10,658	38,213
Russians	9,193	8,875	46,195
Germans	5,733	7,856	30,431
Japanese	2,909	7,122	11,868
Austro-Hungarians	3,045	2,218	21,100
French	1,513	1,420	7,899
British	1,077	706	6,033
Others	5,603	3,249	49,771
Total	180,182	192,684	845,289

Education. The great mass of the population remains illiterate, but in recent years a considerable impetus has been given to primary education, which is free and, in some States at least, nominally compulsory. The constitution empowers the federal government to develop the arts and sciences, but public instruction must be secular; to further industrial education the federal government may aid a State government or a municipal or private school which meets requirements. There is some provision for secondary education; secondary schools in 1909 were stated to number only 327, with 30,258 pupils. The government maintains schools of art, agriculture, and technics. While Brazil has no university, there are faculties of law, medicine, and engineering in several of the large cities. Celebrated for their medical faculties are Rio de Janeiro and Bahia, and for their law faculties, Bahia, Recife, and São Paulo. Schools of all kinds in Brazil number upwards of 13,000, with an enrollment estimated at nearly 750,000.

Production. The Brazilian crop of first commercial importance is coffee, which is grown principally in the State of São Paulo; it is also of considerable importance in other States, especially Rio de Janeiro, Espirito Santo, and Minas Geraes. Next to coffee in commercial importance is rubber, which grows wild in the Amazon region, and the cultivation of which is encouraged by the government. A law of 1912 exempts from duty implements and material for use in the culture, gathering, and refinement of rubber; demonstration farms are conducted to promote the culture, and bounties are granted to cultivators. Other valuable crops are sugarcane, produced chiefly in Pernambuco and other parts of the Northeast; cotton, of which probably 50,000 to 60,000 tons are produced annually, also largely in the Northeast; yerba maté (herva matté), about 50,000 tons a year, chiefly in Paraná; cacao, 30,000 to 40,000 tons, produced especially in Bahia; tobacco, notably in Bahia and Rio Grande do Sul; corn, rice, bananas, and manioc. The last named forms a staple food of the people. Stockraising, which is fostered by the government, has recently received an impetus by a large investment of foreign capital. Figures (which seem to be excessive), were published in 1914 placing the number of horses in Brazil at 7,289,690; cattle, 30,705,400; sheep, 10,649,000; goats, 10,000,000; mules and asses, 3,207,940, and swine, 18,500,000. Mining is not widely developed though many districts are rich in minerals; there is some production of gold, manganese, gems, and monazite sand.

Manufacturing has developed remarkably in the last twenty years, especially in the Federal District and to a considerable degree in the States of São Paulo, Rio de Janeiro, Rio Grande do Sul, Paraná, Pernambuco, Sergipe, Bahia, and Ceará. The industry of prime importance is the manufacture of cotton-piece goods. The other leading industrial products include woolen goods, sugar, dried meat, boots and shoes, fermented and distilled liquors, sacking, tobacco, matches, hats, tanned leather, and earthenware. A report published in September, 1914, stated that the economic prosperity of the preceding four years had been temporarily checked. Particularly since September, 1913, the country had suffered a financial, industrial, and commercial crisis from which there were only slight signs of recovery. The crisis was due largely to a sharp decline in the price of coffee and rubber;

there was a consequent reduction in imports and customs revenue, occurring at a time when the government was heavily obligated to local and foreign contractors and when the stringency in the European money market made loans difficult to obtain at reasonable rates.

COMMERCE. In the special trade, imports and exports of merchandise are reported as follows, in thousands milreis (paper):

	1909	*1910*	*1911*	*1912*	*1913*
Imports:	598,967	713,863	793,716	951,370	1,007,495
Exports:	1,027,773	939,413	1,003,925	1,119,737	972,731

In American money the paper milreis may be considered as worth 32.4 cents. At this rate the imports and exports of merchandise in 1912 amounted to $308,243,736 and $362,794,846 respectively; in 1913, $326,428,509 and $315,164,687. The imports and exports of specie and foreign bank notes were 75,052,000 and 21,628,000 milreis paper in 1912, and 18,727,000 and 87,987,000 in 1913. The leading imports include iron and steel manufactures, machinery, railway materials, cotton goods, flour, coal, wine, arms and ammunition, codfish, kerosene, jerked beef, and paper. The weight (in metric tons) and the value of the principal exports are reported as follows:

	Metric tons		*Value*	
	1912	*1913*	*1912*	*1913*
Coffee	724,818	796,047	$225,992,915	$197,936,296
Rubber	42,286	36,232	78,125,250	50,361,161
Herva matté	62,880	65,415	10,205,864	11,473,617
Cotton	15,774	37,424	5,035,519	11,201,479
Hides	36,255	35,075	9,765,863	10,803,868
Tobacco	24,706	29,388	6,962,440	7,950,799
Cacao	30,492	29,759	7,421,832	7,785,376
Peltry (raw)	8,189	8,232	8,680,148	8,742,350
Carnauba wax	3,099	3,867	1,763,899	2,133,383
Gold in bars	......	......	2,116,200	1,783,622
Bran	54,424	82,264	1,672,782	1,571,709
Cotton seed	36,793	49,779	892,703	1,160,381
Manganese ore	154,870	122,300	1,115,079	880,572
Brazil nuts	......	......	2,122,163	797,306
Sugar	4,772	5,367	272,086	314,507

The coffee export is reckoned in bags of 60 kilos each or in metric tons (1000 kilos); the fluctuations in this export may be seen in the following figures: in 1900, 8,920,469 bags; in 1901, 14,759,845; in 1902, 12,157,383; in 1903, 19,927,239; in 1904, 10,024,536; in 1905, 10,820,651; in 1906, 13,965,800; in 1907, 15,680,172; in 1908, 12,658,457; in 1909, 16,880,696; in 1910, 9,723,738; in 1911, 11,257,802; in 1912, 12,080,303; in 1913, 13,267,449. In 1910 the rubber export amounted to 38,547 metric tons; in 1911, 36,547. Very noticeable is the increase in the cotton export of 1913 over that of 1912. Methods of cotton culture are most antiquated; there seems little doubt that with proper cultivation Brazil would soon become one of the foremost cotton-exporting countries of the world.

The special trade by countries is reported as follows, in thousands of dollars:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United Kingdom	77,616	79,881	43,066	41,702
Germany	53,018	57,044	51,928	44,392
United States	48,109	51,290	141,915	102,563
France	27,751	31,940	35,515	38,686
Argentina	23,117	24,294	14,229	14,848
Belgium	16,580	16,679	9,729	8,093
Portugal	14,589	14,328	7,769	1,589
Italy	12,096	12,366	4,096	4,067
Uruguay	7,718	7,047	4,161	5,167
Austria-Hungary	4,395	4,928	18,258	15,206
Switzerland	3,860	3,844	......	......
Newfoundland	2,854	3,825	......	......
Netherlands	2,305	3,537	22,981	23,253
Total, including other	308,244	326,429	362,795	315,165

Of the total importations of merchandise, the United Kingdom furnished 25.2 per cent in 1912 and 24.5 per cent in 1913; Germany, 17.2 and 17.5; United States, 15.6 and 15.7; France, 9.0 and 9.8; Argentina, 7.5 and 7.4; Belgium, 5.4 and 5.1; Portugal, 4.7 and 4.4. The share of the port of Rio de Janeiro in the imports in both 1912 and 1913 was 39 per cent; Santos, 26.1 and 27.1; Pernambuco, 5.5 and 6.0; Belém, 5.0 and 4.3; Bahia, 5.5 and 5.4; Porto Alegre, 3.7 and 3.7. During the first six months of 1914, imports declined about 40 per cent as compared with those of the same period in 1913.

SHIPPING. The tonnage entered at Brazilian ports increased from 16,737,832 in 1907 to 21,405,174 in 1910 and 26,505,884 in 1912. In 1913 there were entered at the ports 27,782 vessels, of 29,170,179 tons, of which sailing vessels were 6295, of 606,266 tons. Brazilian vessels numbered 20,905, of 10,343,968 tons, of which sailing vessels were 5743, of 251,195 tons. Brazilian steamers numbered 15,162, of 10,092,773 tons, and foreign steamers 6325, of 18,471,220 tons. British tonnage entered was 9,866,817 (of which, sail 64,375); German, 4,285,095 (31,366); French, 1,306,102 (9790); Italian, 1,124,068 (34,949); Austro-Hungarian, 556,958; Dutch, 550,390 (242). The North American shipping entered was only 10 steamers, of 24,240 tons.

COMMUNICATIONS. The reported length of railway open to traffic on Dec. 31, 1913, was 24,580 kilometers (15,273 miles); of these, lines belonging to and managed by the Federal government comprised 3522 km. (2188 m.); lines belonging to the Federal government and leased to private companies, 9218 km. (5727 m.); lines conceded by the Federal government, some with and some without guarantee of interest, 5558 km. (3454 m.); lines operated by private companies under concessions of State governments, 6282 km. (3903 m.). Brazilian railway open to traffic has developed as follows: 1854, 14.5 km.; 1870, 745 km.; 1880, 3398 km.; 1890, 9973 km.; 1900, 15,316 km.; 1905, 16,781 km.; 1910, 21,467 km.; 1911, 22,287 km.; 1912, 22,887 km.; 1913, 24,580 km.

During 1914 a railway of considerable importance was opened between Itapura on the Rio Paraná and Porta Esperanza near Corumba, the most important city of the State of Matto Grosso. Ferryboats effect communication between Porta Esperanza and Corumba, both of which towns are on the Rio Paranã, and the new line will result in direct communication between the Southern part of the State of Matto Grosso and the State of São Paulo, reducing the time of the journey between Rio de Janeiro and Corumba to six days, in place of a trip by water involving a voyage of from six to eight weeks. In 1914 there were in operation in the Brazilian

State of Rio Grande do Sul 1,489 miles of railway and about 200 miles more were to be opened to traffic before the end of 1914. The financial condition in Brazil, which was bad in 1913, improved in 1914, and had its effect on the operation of the various railway companies. The Brazil Railway Company incorporated in 1906 was operating directly some 3280 miles of railway in Southern Brazil, and in addition had a large interest in the Paulista and Mogyana Railways which had 1795 miles of line in the State of São Paulo. In 1913 all rail communication between São Paulo and Montevideo was established by the completion of the bridge over the River Uruguay and of the connection with the Central Uruguay at Sant' Anna. In 1914 a total of 471 miles of line controlled by the South American Railway Construction Company was in operation in Brazil and the same company was building 29 miles of the line from Fort Aleza to Macapa, 3 miles on the branch from Ico, 31 miles from Fort Aleza to Itapico, 21 miles from Camocim to Therezina and 12 miles from Amaracao to Campo Naior, a total of 96 miles, being actually under construction. In addition to this the company had plans to build 709 miles of approved proposed line. Originally, railway building in Brazil aimed at establishing communication between an interior productive region and the nearest seaport. Thus developed several unconnected systems. Recife is the focus of one system, Bahia of another, Rio de Janeiro of a third, São Paulo and Santos of a fourth, and Rio Grande do Sul of a fifth. The desirability of connecting these systems has in recent years become increasingly apparent. Rail connection has been established between the ports of Natal and Maceió, through Recife. Farther south construction has been greater. Railway is in operation from the port of Victoria to Rio de Janeiro, São Paulo (and Santos), Porto Alegre, and Rio Grande do Sul. The railway has been extended to the frontier, connecting with the Uruguayan system; before the close of 1913, travel by rail was possible between Rio de Janeiro and Montevideo (3165 kilometers, 1967 miles). Steamers regularly ply the Amazon, Negro, Purús, Madeira, Tocantins, São Francisco, and other large rivers.

As reported for 1911, there were 58,257 kilometers (36,199 miles) of telegraph line, with 117,682 km. of wire and 2187 offices; also 11 radiotelegraph stations, and 28 on board ship. The federal telegraph on Jan. 1, 1914, had in operation 34,430 km. (21,394 m.) of line, with 740 offices. Radiotelegraphy is developing rapidly. Pursuant to a decree of Feb. 19, 1913, the following radiotelegraph stations were established: Belém, with a 4000-mile range, for communication with the United States and the north; Cape Santa Marta, with same range, for communication with the south and Capetown; Rio de Janeiro, 2000 miles, for the coast and interior; the islands of Fernando de Noronha and Trinidad, each 2000 miles. Other stations, chiefly for the marine service, are at Maranhão, Fortaleza, Olinda (State of Pernambuco), Bahia, São Thomé, Florianapolis, Cape Frio, and Rio Grande do Sul. In addition, there are 24 stations on the large rivers, and others are projected. Brazil has adopted standard time and the longitude of Greenwich (instead of that of Rio de Janeiro) from Jan. 1, 1914.

FINANCE. The gold milreis is worth 54.6 cents. The paper milreis fluctuates between 31.5 cents and 33.5 cents, its par value being 32.444 cents. The aggregate expenditure as estimated for the several ministeries for 1914 was 70,179,809 milreis gold and 420,923,469 milreis paper; in addition, there was an application of special revenue, making the total estimated expenditure 95,469,809 milreis gold and 435,773,469 paper. The estimate for the ministry of finance was 52,618,843 milreis gold and 108,970,679 paper; communications and public works, 10,662,059 and 124,160,037; marine, 2,900,000 and 42,154,754; war, 250,000 and 71,978,543; justice, interior, and public instruction, 15,119 and 47,552,499. Public debt, Dec. 31, 1912: Foreign, £81,447,520 and 299,032,000 francs; internal, 685,289,200 milreis paper; floating, 274,377,588 milreis paper; paper money in circulation, 607,025,525 milreis.

ARMY. According to the law of January, 1908, military service is compulsory from 21 years of age to 45, yet the permanent army is recruited mainly by voluntary enlistments with deficiencies in numbers supplied by lot. Two years are spent in the ranks, 7 in the reserve, 7 in the territorial army, and 8 in the National Guard, periods of training and rifle practice being provided for reservists and men of the territorial army. The army is made up of 15 regiments of infantry, each of 3 battalions, 12 battalions of rifles, 12 regiments of cavalry of 4 squadrons, and 5 regiments of 2 squadrons, 5 regiments of field artillery of 9 4-gun batteries, 9 horse artillery batteries, 5 howitzer batteries, 6 mountain batteries, 5 battalions of engineers, and 9 battalions of garrison artillery. The republic is divided into 13 territorial districts, each generally supplying a rifle battalion, and the territorial division is observed in formation of strategical brigades located in the South near the southern frontiers. The total peace strength is about 23,500. There is a gendarmerie of 20,000.

NAVY. The Brazilian navy in 1914 included the following vessels: Two battleships (*Minas Geraes*, 1908; *São Paulo*, 1909), aggregating 38,500 tons; two armored coast guards (*Deodoro*, 1898; *Floriano*, 1899), 6320 tons; two monitors (*Pernambuco* and *Maranhão*, 1905), 940 tons; two scout cruisers (*Rio Grande* and *Bahia*, 1909), 6200 tons; one protected cruiser (*Barroso*, 1896), 3450 tons; three torpedo cruisers (*Tupy*, 1896, and *Tamoyo* and *Tymbira*, 1898), 3090 tons; ten torpedo-boat destroyers (1908–10), 6500 tons. In addition, there were river gunboats, transports, dispatch boats, school ships, and several obsolete vessels. The programme under which the dreadnoughts *Minas Geraes* and *São Paulo* were built provided for a third battleship, the *Rio de Janeiro*. This vessel was launched at Elswick Jan. 22, 1913; in the autumn of that year, the Brazilian government announced that the battleship did not harmonize with the fleet and would be sold. The ship was sold to Turkey, receiving the name *Sultan Osman I*. It was completed in 1914, but did not join the Turkish fleet before the outbreak of the war, when it was taken over by the British government and renamed *Agincourt*. The vessel has a displacement of 27,500 tons, a main battery of 14 12-in. guns, 20 6-in. guns, 3 torpedo tubes, 45,000 indicated horsepower, a speed of 22½ knots, and a complement of 1100.

GOVERNMENT. The constitution bears date of

Feb. 24, 1891. The Federal Congress consists of the Senate and the Chamber of Deputies. Senators, elected by direct vote for nine years, number 63, three for each State and the Federal District. There are 212 Deputies elected for three years. The President, who is elected by direct vote for four years and is ineligible for the succeeding term, is assisted by a cabinet of seven ministers appointed by and responsible to himself. For the term Nov. 15, 1910–Nov. 15, 1914, the President was Marshall Hermes da Fonseca; Vice-President, Wenceslao Braz Pereira Gomes. In March, 1914, the Vice-President was elected to the presidency for the four-year term beginning November 15. Urbano dos Santos was elected as the new Vice-President.

The Brazilians, with elective governors and legislatures, have a large degree of autonomy. The Federal District is administered by an elective council and a prefect appointed for four years by the President.

HISTORY. The presidential elections in March, 1914, resulted in an easy victory for Vice-President Wenceslao Braz, who was elected for the term beginning Nov. 15, 1914. Disturbances had interfered with the elections in the State of Ceara, and it had been necessary to proclaim martial law in Rio de Janeiro, Nictheroy, and Petropolis, in order to prevent outbreaks of the insurrectionary elements. In April the president-elect published a summary of his policy, in which he dealt with such varied topics as national defense, coffee, rubber, stock-breeding, cocoa, iron, immigration, the encouragement of cotton-growing, and railway construction. In his presidential message, at the opening of Congress on May 4, he took cognizance of the recent visits of Prince Henry of Prussia, and Colonel Theodore Roosevelt, as well as of the "A B C" mediatory conference at Niagara. (See MEXICO, *History.*) He was emphatic in urging a policy of severe economy and retrenchment, on the ground that in no other way could Brazil extricate herself from her present financial difficulties.

The decline in the price of coffee and rubber was the fundamental cause of Brazil's financial embarrassment, and the financial stringency was all the more keenly felt because of the extravagant and optimistic course hitherto pursued. One of the most alarming symptoms of the financial condition was the failure of three railways in the rubber district, with liabilities of $25,000,000, held mostly by French investors. Considerations of economy were not powerful enough, however, to prevent the government from deciding to order a new dreadnought of 30,000 tons from Armstrong, Whitworth & Co. to replace the *Rio de Janeiro*, which had been sold to Turkey; nor was the Brazilian Congress deterred by motives of thrift from authorizing a European loan of $125,000,000. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties.*

BREEDING. See STOCK-RAISING.

BREMNER, ROBERT GUNN. Member of Congress from New Jersey, died Feb. 5, 1914. He was born in 1873 at Keiss, Scotland. As a boy he came with his parents to America settling on a farm at Camilla, two miles north of Toronto. In 1893 he removed to Chicago where he worked as an electrician at the world's fair. Two years later he engaged in newspaper work in Paterson, N. J. At the outbreak of the Spanish-American War he enlisted in the Second New Jersey Volunteer Infantry and after the war closed returned to Paterson. Here he continued his newspaper work and in 1902 became editor and publisher of the Passaic *Herald*. He was a close friend of President Wilson and was one of the chief aids of the former in his campaign for the Governorship of New Jersey. In 1912 he was elected to Congress and occupied a seat in the House of Representatives until his death. Public attention was attracted to him through the attempt to save him from death from cancer by application of radium. Previous to his illness he had earnestly advocated, in the House of Representatives, government ownership of radium-bearing lands.

BRENT, CHARLES HENRY. An American Protestant Episcopal bishop, elected in 1914 Bishop of the diocese of New Jersey. He was born in Newcastle, Ontario, in 1862, and was educated at Trinity College, Toronto, where he graduated in 1884. He was made a deacon in 1886 and priest in the following year. He was assistant minister at St. Paul's Cathedral in Buffalo until 1888, when he went to Boston as rector of the Church of St. John the Evangelist. He became associate rector of the parish of St. Stephen's in Boston in 1901, and in the same year was elected Bishop of the Philippine Islands at a general convention. His work in the Philippines was noteworthy. He labored untiringly in his immense diocese, but found time to assist in public affairs. He was made chief commissioner of the United States and member of the International Opium Commission which took up the study of the use of opium in the Far East. His work in that connection was so valuable that he was made chairman of the United States delegation to the International Opium Conference at The Hague in 1911. In addition to these duties he found time to engage in religious literary work. He was on the editorial staff of the *Churchman* from 1897 to 1900, and was the William Belden Noble lecturer at Harvard in 1907. He succeeded John Scarborough (q.v.) as Bishop of New Jersey. His published writings include: *With God in the World* (1899); *The Consolations of the Cross* (1902); *The Splendor of the Human Body* (1904); *With God in Prayer* (1907); *Leadership* (1908); *A Glorious Ministry* (1910); *The Sixth Sense* (1911).

BRESLAU. See NAVAL PROGRESS.

BRETHREN, CHURCH OF THE (also known as Dunkers or Dunkards). There are three groups of this denomination—the Conservatives, Progressives, and the Old Order. The first are the most numerous, numbering in the United States and Canada in 1914, about 95,000 communicants, 1000 congregations, and 3060 ministers. The Progressive church is second in point of numbers, with 20,500 communicants, 215 churches, and 192 ministers. The Old Order keep no record, but are presumed to number about 4000, with 72 congregations, and 216 ministers. The Conservatives have ten schools, one of them Bethany Bible School, in Chicago, devoted exclusively to Bible work. At Elgin, Ill., they have one of the largest denominational publishing houses in the West, and publish a number of papers and books. Mission work is carried on in Denmark, Sweden, India, and China. As soon as it is safe to enter Palestine, Eld. Galen B. Royer, Secretary of the General Mission Board, will proceed to Jerusalem to open up mission work in that city. The conference for 1914 was held at Seattle, Wash. The conference for 1915 convenes at Hersey, Pa., June 8. The Progressive Brethren maintain a college and publishing house at Ashland, Ohio. In addition to these branches, there is also a small body known as the Seventh-Day German Baptist Brethren, which has about 250 communicants, 11 churches and 8 ministers. It is located in the vicinity of Ephrata, Pa.

BREWING. See LIQUORS.

BRICK. See CLAY-WORKING INDUSTRIES.

BRIDGES. Bridge construction in 1914 proceeded in an orderly way with continued work on a number of notable structures, and but a few large and important projects were under way. As a result of the European War there was rather more demolition than construction to be recorded in Europe, and for the more notable structures of the year attention was directed to the United States. The bridge problem in America has involved the reconstruction and the reënforcement of practically every large bridge erected since 1880, due to increased traffic, and increased weights of rolling stock. Furthermore, in bridges near cities the growth of suburban and other rapid transit has also been a contributing source to this end. The Williamsburg Bridge at New York City required considerable reënforcement in order to strengthen it for the extra traffic it was to bear, and typical of this operation was the replacement of four 10-inch carbon steel pins by 13-inch pins of nickel-steel, this materially increasing the strength and capacity. In the same way it was found desirable to increase the capacity of another bridge leading from Manhattan Island, namely the Queensboro Bridge, by the rearrangement of tracks and floor system, and the plans considered for this purpose involved an estimated expenditure of over $3,000,000. Likewise the Brooklyn Bridge, which was among the first to be reënforced, was a subject of study, and the plans considered the entire replacement of the suspended structure. In connection with the reconstruction and replacement of bridges it was found necessary to do this on a large scale for railway bridges, and a favorite method was to construct a new bridge by the side of the old bridge, and when completely finished roll the former into place. A construction of this kind was the bridge of the Pennsylvania Railroad over the Muskingum River when three 240-foot double-track through spans, aggregating in weight 3500 tons, were moved laterally a distance of 44 feet in 10 minutes and 17 seconds between trains. A similar method was also applied in the reconstruction of the Ohio Connecting Bridge below Pittsburgh, when 11 new 175-foot double-track deck spans, weighing 600 tons each, were placed without the interruption of traffic.

QUEBEC BRIDGE. At the end of the year it was reported that the Dominion Bridge Company was making rapid progress on the new Quebec Bridge, and that the piers having been completed, 42 per cent of the steel had been fabricated, and 18 per cent erected, so that the bridge probably would be finished on time and within the original cost estimate.

An interesting method of construction was planned for the 640-foot double-track suspended span, which has a weight of 6400 tons. The method selected was to float this part of the structure into position and then raise it bodily to a height of 150 feet above the water to its final position.

It is stated that the steel falsework alone weighed 3000 tons, and the steel travelers, 220 feet high, weighed nearly 1000 tons each, while a 90-ton girder crane was employed in the field storage yard. Toward the end of the year about one-third of the 65,000 tons of steel required for the bridge had been fabricated and about 10,000 tons erected, 410 tons of steel being erected in a single day with the driving of 16 large pins, which was claimed as a world's record in bridge construction, and at the end of the year one of the anchor arms had been nearly completed, the piers of course having been finished much earlier.

The Quebec Bridge has a channel span of 1800 feet between pier centres, thus being the largest bridge in the world, but at the same time there were novelties in the design, fabrication, and erection, to which the attention of engineers were directed. The design, a straight chord K-truss, was practically unknown in America, notwithstanding its advantage for long span bridges, and for it was claimed convenience in erection, freedom from secondary stresses, and the distribution of the various trusses. Furthermore, in its details many ingenious schemes had been worked out, so that the construction was really epoch-making in American bridge building.

HELL GATE BRIDGE. Work proceeded during the year on the construction of the approaches for the Hell Gate Bridge, which was being built by the New York Connecting Railway across Hell Gate, connecting Long Island with the mainland. This bridge has a span of 977.5 feet between centres of the end hinges and is the largest bridge of this type in the world. It will have a total weight of steel in the arch proper of 20,000 tons, and a number of new features. At the end of the year the temporary anchors for erecting the arch cantilever fashion had been almost completed, and preparations for a similar installation on Ward's Island were in progress so that the erection of the arch could be begun in April, 1915, after which about 4 months' time would be required for its completion. The entire bridge and approaches it was expected would be finished in 1916.

Plans were made during the year for the Chesapeake and Ohio Railway to cross the Ohio River at Sciotoville by Gustav Lindenthal, the designer of the Hell Gate Bridge and other notable bridges. This was a double-track structure about 3500 feet in length with two 775-foot channel spans. All riveted continuous girders over three supports will be used for the main trusses, as there is a rock foundation at the side, so that instead of two independent spans a much more economical method of construction is available. During the year the work on the foundations was started. In the Middle West a contract was awarded for the steel superstructure of the Memphis cantilever bridge across the Mississippi River, with a maximum span of about 790 feet, designed by Ralph Modjeski, and this new structure will supplement the existing bridge nearby. A contract was also awarded during the year for the Metropolis Bridge across the Ohio River, designed by C. H. Cartlidge, with a maximum span length of about 723 feet between pier centres.

PROPOSED PROJECTS. In addition to actual construction and design during 1914 a number of large projects for future erection were under construction. These included a 2880-foot span, truss-cable suspension bridge across the North River, and a cantilever bridge across San Francisco Bay, with three 2000-foot spans. At New Orleans a 1071-foot cantilever bridge across the Mississippi River was once more discussed; and plans were under way for a 1600-foot cantilever bridge across the mouth of Sydney Harbor, Australia. The latter bridge was designed for a live load of 15,000 pounds per foot of bridge, which was nearly 50 per cent higher than that deemed necessary for the Quebec Bridge, while a life of 100 years was estimated for the steel work. The Parliamentary Public Utilities Commission entrusted with the examination of the spans reported in favor of a design for a special triangular truss in preference to one with a K-truss.

Discussion continued regarding the construction of a bridge across the North River from Manhattan Island to New Jersey, one proposition being that the bridge should be constructed by private capital and leased to such railroads as desired it and the States of New York and New Jersey, one-half of the cost being assumed by the railways and one-half by the States. The structure proposed under this plan was to have two decks, one carrying eight railway tracks and the other to be used for highway traffic. There would be a central span of 3000 feet carried by main towers, each about 600 feet in height.

In Great Britain the most notable construction was the new Southwark bridge, which was being built with massive blocks of granite. At the end of the year the approaches of this structure, which was described in the YEAR BOOK for 1913, were practically completed, and it was believed that it would be finished within the time specified in the contract. A new road bridge over the River Esk on the road from Carlisle to Glasgow was built during the year. It was carried on ferro-concrete arches supported on red freestone foundations with a central arch span of 175 feet and shore spans of 147 feet. The Kingston bridge was widened during the year from 25 to 55 feet, providing a carriageway 35 feet wide and a foot-way 10 feet wide either side.

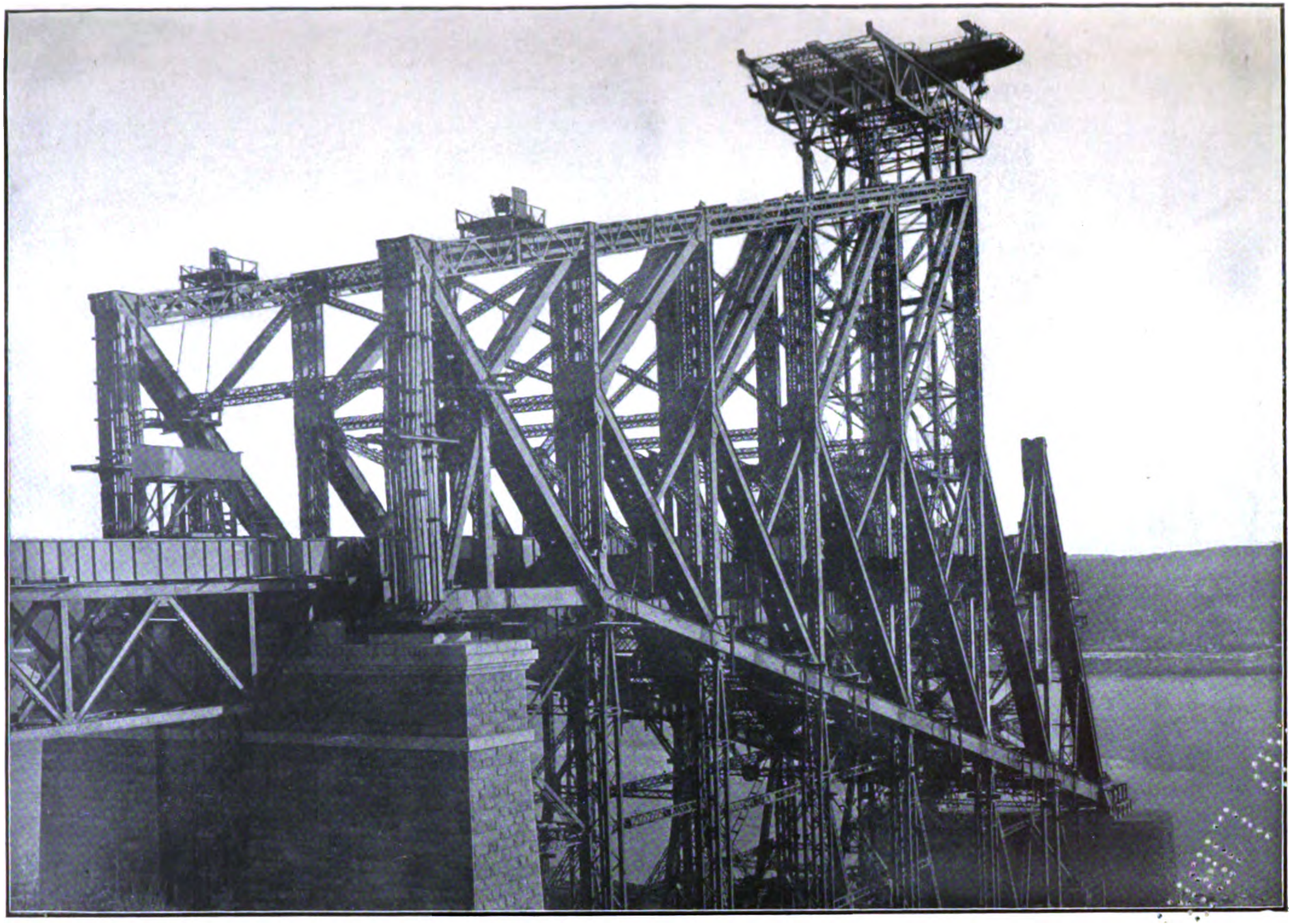
The Sara Bridge spanning the lower Ganges was practically completed by the end of the year and was to be opened early in 1915. The cost of this bridge was said to be £1,250,000. This bridge was described in the YEAR BOOK for 1912. Another interesting bridge in India spans the Goombee River at Lucknow, consisting of five 75-foot arch spans constructed of mixed brick, stone and reënforced concrete.

BRITISH COLUMBIA. A province of the Dominion of Canada. Area, 355,855 square miles, with a population (1911) of 392,480; an increase of 119.7 per cent over that of 1901—178,657. The capital is Victoria, with (1911) 31,660 inhabitants; Vancouver had 100,401, and New Westminster 13,199. The province is administered by a lieutenant-governor, appointed by the Governor-General of Canada and acting through a responsible executive council of seven members. There is a unicameral legislative assembly of 42 members directly elected for four years. Thomas W. Paterson, appointed Lieutenant-Governor in 1909, was succeeded in 1914 by Frank Barnard. Premier in 1914, Sir Richard McBride. See CANADA.

BRITISH EAST AFRICA. See EAST AFRICA PROTECTORATE, UGANDA, and ZANZIBAR.

BRITISH GUIANA. A British colony, including the settlements of Demerara, Essequibo, and Berbice, lying to the east of Venezuela on the northeastern coast of South America. The capital is Georgetown. Area, 90,277 sq. miles; population (1911), 296,041 (98,154 in 1841). Unenumerated aborigines were estimated at 10,000. The East Indian immigrant population on estates March 31, 1912, numbered 9453 under indenture, 39,283 not under indenture, and 18,159 children; not residing on estates, 62,494: total immigrant population, 129,389. The birth rate in 1907 was 28.3, and the death rate 36.9, per thousand inhabitants. The chief product is sugar (which forms 76 per cent of the export trade); there are 43 sugar estates in active operation, with a total area of 156,666 acres, of which 67,888 are under sugar, 5196 under plantains, etc., and the remainder pasture or uncultivated. The bulk of the sugar produced for export is known as Demerara crystals; 77,821 tons were exported during 1912, besides 2,384,182 pf. gallons of rum, 176,051 gallons of molasses, and 5116 tons of molascuit. On the lowlands about 42,000 acres are under rice; export in 1912, 6,159,429 lbs., valued at £38,720. The forests abound in valuable woods. The country is rich in gold; 48,779 ozs. were exported in 1912, valued at £177,968. Diamond export in 1912, 5229 carats, valued at £6861. Other exports in 1912 were balata, £101,547; timber, £13,090; firewood, £3669; shingles, £2281; lumber, £2467; charcoal, £7487. About half of the trade is with the United Kingdom. The imports for the year 1912 were valued at £1,703,355, and the exports at £1,798,597; including £71,563 transit. Customs revenue 1912–13, £336,907. Public debt, March 31, 1913, £884,615. The revenue for the year 1912–13 amounted to £580,446 (£593,498 in 1911–12), and the expenditure to £590,745 (£588,625). The colony is administered by a Governor (Sir W. Egerton in 1914), assisted by an executive council and a court of policy.

BRITISH HONDURAS. A British colony on the east coast of Central America, south of Yucatan, on the Caribbean Sea. The capital is Belize, with 10,478 inhabitants. Area, 8598 sq. miles, of which about 80 sq. miles are under cultivation. Population, April 2, 1913, 41,170. The schools, with a few exceptions, are denominational, inspected, and government-aided. Average attendance, 3837. The climate is subtropical. Wood-cutting is the chief industry; 16,019,932 superficial feet of mahogany, 2,638,811 superficial feet of cedar, and 3662 tons of logwood were exported in 1912. Other important exports are bananas, 470,039 bunches in 1912; plantains, 3,341,425; coconuts, 6,553,539; sapodilla gum, 3,309,277 pounds; rubber, 20,722 pounds; sponges, 10,488 pounds; tortoise-shell, 3627 pounds. The total imports in 1912 were valued at $3,496,908 ($2,886,677 in 1911), and the exports at $2,856,043 ($2,685,849). Total customs revenue for 1912–13, $297,644. Total tonnage entered and cleared in 1912–13, 630,064 (588,367 in 1911–12). The revenue for 1912–13 was $575,243 ($1,201,908 in 1911–12, including revenue from loans); expenditure, $611,131 ($532,123). Public debt, $946,415. The colony



NEW QUEBEC BRIDGE IN COURSE OF ERECTION
NORTH ANCHOR ARM WHEN WORK CLOSED DOWN FOR SEASON OF 1914

is administered by a governor (Wilfred Collet in 1914), assisted by an executive and a legislative council.

BRITISH INDIA. See INDIA, BRITISH.

BRITISH NEW GUINEA. See PAPUA.

BRITISH NORTH BORNEO. A British protectorate under the jurisdiction of the British North Borneo Company, including the whole of the northern portion of the island of Borneo from the Sipitong River on the west to lat. 4° 10′ N. on the east coast, together with adjacent islands. It is held under grant from the Sultans of Brunei and Sulu. It covers an area of 31,000 square miles, with a coast line of about 900 miles. The inhabitants numbered in 1911 about 208,000—Bruneis, Illanuns, Bajaus, and Sulus on the coast; Dusuns and Muruts in the interior. There are about 30,000 Chinese who carry on cultivation in the flat coast areas. Europeans number about 400. Sandakan is the chief town, and with suburbs has a population of 12,000. There are mission schools.

Agriculture has advanced beyond the primitive stage. Tobacco is a valuable crop, the export in 1908 amounting in value to nearly $3,000,000. Other products for export are tapioca, gambier, pepper, rubber, tea, sago, coffee, rattans, beeswax, camphor, damar, cattle, and cutch. There is a profitable timber trade with China and Manila. Some coal is worked; large deposits of iron ore have been discovered, and oil belts exist on the west coast. Imports for the year 1912 were valued at 5,476,214 Straits Settlements dollars and exports at 5,692,275 dollars respectively; in 1911 at 4,603,071 and 4,836,795. Total tonnage entered and cleared, 385,331, of which 128,146 tons British; in 1911, 353,308 tons, of which 118,206 tons British. A meter-gauge railway extends from Brunei Bay to Beaufort, 20 miles; and from Beaufort to Jesselton, 57 miles. There is also a line from Beaufort to Tenom, 33 miles. Internal communication is mostly by water. Wireless stations are in course of construction at Sandakan, Jesselton, Lahad Datu, and Sebattik.

The revenue for the year 1912, inclusive of land sales, amounted to 1,508,285 dollars and the expenditure to 915,690 dollars; in 1911, 1,366,768 and 829,251. The revenue is derived from import and export duties, stamps, royalties, poll tax; licenses for the sale of opium, spirits, and tobacco; and from the sale and rent of forest and other lands.

The appointment of the Governor (C. W. C. Parr in 1914) is subject to the approval of the Secretary of State. The laws are based on the Indian code, with an Imam's court for Mohammedan law. There is a native military force under European officers.

BRITISH SOMALILAND. See SOMALILAND PROTECTORATE.

BRITISH SOUTH AFRICA. See SOUTH AFRICA, UNION OF.

BRITISH WEST AFRICA. A collective name for the following British colonies and protectorates in Western Africa: NIGERIA, including the colony and protectorate; GOLD COAST COLONY, including Ashanti and the northern Territories; SIERRA LEONE, including the colony and the protectorate; and GAMBIA, including the colony and the protectorate. See these separate titles.

BROOKS, JAMES BYRON. American lawyer and educator, died June 17, 1914. He was born in Rockingham, Vt., in 1839, and graduated from Dartmouth College in 1869. He studied law at the Albany Law School, receiving the degree of LL.B. in 1871. Previous to this he had served in the Civil War, reaching the rank of captain. He was wounded in the Battle of the Wilderness in 1864 and was discharged from the service on account of this wound. From 1872 until the time of his death he was engaged in the practice of law in Syracuse. He held several offices in the administration of that city and from 1895 until his death he was dean in the College of Law at Syracuse University. He was a member of several bar associations.

BROWN, CHARLES RUFUS. An American theologian and educator, died Feb. 2, 1914. He was born in East Kingston, N. H., in 1849, and graduated from the United States Naval Academy in 1869. He served in the navy from 1870 to 1875, when he entered Harvard College, graduating in 1877. He then studied law at the Newton Theological Institution and the Union Theological Seminary, and took post-graduate studies at the universities of Berlin and Leipzig. He was ordained to the Baptist ministry in 1881 and for two years was pastor at Franklin Falls, N. H. In the latter year he was appointed associate professor of Biblical interpretation at the Newton Theological Institution. He became professor of Hebrew and cognate languages at this institution in 1886 and held this post until his death. He was also professor of Hebrew and cognate languages at the University of Chicago in the summer quarter of 1897, and in 1905 and 1906 was acting professor of Hebrew and Old Testament exegesis at the Boston University School of Theology. In 1910 he was resident director of the American School of Oriental Research in Jerusalem. His published writings include: *An Aramaic Method* (1884, 1893); *The Book of the Prophet Jeremiah* (new translation, 1906); *Commentary on Jeremiah* (1907). He also contributed on theological subjects to reviews.

BROWN, THERON. An American clergyman and editor, died Feb. 14, 1914. He was born at Willimantic, Conn., in 1832, and graduated from Yale College in 1856. He studied theology at the Hartford Theological Seminary and at the Newton Theological Institution in Massachusetts until 1870, when he joined the staff of the *Youth's Companion* and remained on the editorial staff of that paper until his death. His published writings include: *The Red Shanty Series* (1875 to 1878); *Stories for Sunday* (1877); *Life Songs* (poems, 1894); *Nameless Women of the Bible* (1904); *Under the Mulberry Tree* (a novel, 1909); *The Birds of God* (1911).

BROWN UNIVERSITY. An institution for higher education, founded at Providence, R. I., in 1764. The students in the autumn of 1914 numbered 1012, of whom 910 were undergraduate and 102 graduate students, and there was a faculty numbering 77. There were several changes in the faculty during the year 1914–15: among these was the promotion of R. M. Mitchell and H. F. Micoleau, formerly instructors, to assistant professors; J. H. Appleton retired and was appointed Professor Emeritus; professors N. F. David and L. T. Damon were granted leaves of absence for the year, and H. E. Bigelow and P. B. Perkins (new men) were appointed assistant professors. There were no noteworthy benefactions received during the year. The number of volumes in the main library was 205,000. The president is W. H. P. Faunce, D.D.

BRUSSILOF EXPEDITION. See POLAR RESEARCH, *Arctic.*

BRYANT, JOSEPH DECATUR. An American surgeon, died April 7, 1914. He was born in East Troy, Wis., in 1845, and received his early education at the Norwich (N. Y.) Academy. He studied medicine at the Bellevue Hospital Medical College, receiving the degree of M.D. in 1868. After serving for several years in Bellevue Hospital as an interne, he became in 1871 assistant to the chair of anatomy in the Bellevue Hospital Medical College. He became lecturer on surgical anatomy, assistant demonstrator of anatomy, professor of general descriptive and surgical anatomy, professor of anatomy and clinical surgery, and associate professor of orthopedic surgery in that college. From 1898 until his death he was also professor of the principles and practice of surgery and of operative and clinical surgery at the University and Bellevue Hospital Medical College. From 1873 to 1879 he was sanitary inspector of the New York City Health Department, and was Commissioner of the New York State Board of Health from 1873 to 1879, and from 1887 to 1893. He was attending and visiting surgeon in many of the important hospitals of New York City. He was much interested in militia affairs, and in 1873 became surgeon of the Seventy-first Regiment. In 1882 he was appointed by Governor Cleveland Surgeon-General of the State. Dr. Bryant became widely known as an intimate friend and companion of President Cleveland, whose personal physician he was. He received an honorary degree of LL.D. from New York University in 1908, and he was a member of many medical and scientific societies. He was the author of medical monographs, and of *Operative Surgery* and *Bryant and Buck's American System of Surgery.*

BRYN MAWR COLLEGE. An institution for the higher education of women, founded at Bryn Mawr, Pa., in 1885. The number of students enrolled on Nov. 15, 1914, was 439, including 72 graduates, with a faculty and teaching staff numbering 62. The benefactions for the year 1913–14 included an addition of $2670 to the endowment fund from the Bryn Mawr College Undergraduate Association; $5000 addition to the scholarship funds from Mr. Alexander Simpson of Philadelphia; $10,000 addition to the Current Expenses Funds for scholarships, fellowships, and other current expenses by Miss Mary E. Garrett, of Bryn Mawr. During the year two associate professors of education on the Phebe Anna Thorne Foundation, established in 1913, were appointed. Six teachers were also appointed on the Model School staff, and the first class of this school was opened with 20 children, who will receive a seven years' course of preparation for college. The productive funds of the college at the end of the college year 1913–14 amounted to $1,884,323 and the income to $75,258. The library on Oct. 1, 1914, contained 74,293 volumes. The president is M. Carey Thomas, Ph.D., LL.D.

BUBONIC PLAGUE. See PLAGUE.

BUCKNER, SIMON BOLIVAR. An American soldier, died Jan. 8, 1914. He was born in Hart County, Ky., in 1821. In 1844 he graduated from the United States Military Academy at West Point and was appointed Second Lieutenant. In the following year he was appointed assistant instructor in ethics at the Military Academy, but served only a short time before the Mexican War broke out. He took an active part in this war and was brevetted for gallantry in several engagements. From 1848 to 1850 he was assistant instructor in infantry tactics at West Point, and was promoted to be captain and was made commissary of subsistence in 1852. In 1855 he resigned from the army and practiced law until the outbreak of the Civil War. He was made commander of the State Guard of Kentucky, and in 1861 issued an address to the people calling upon them to take up arms against the Union. After the battle of Fort Donelson he commanded a Confederate brigade and on Feb. 16, 1862, surrendered the fort to General Grant. He was in prison at Fort Warren, Boston, until exchanged in August, 1862. He was later made a major-general and commanded a grand division at the battles of Murfreesboro and Chickamauga. He surrendered with Kirby Smith's army to General Osterhaus at Baton Rouge on May 26, 1865. After the close of the war he resumed the practice of law and soon became prominent throughout Kentucky, where in 1887 he was elected Governor. He was a candidate of the gold Democratic party for Vice-President in 1896, running on the ticket with John M. Palmer of Illinois. He was one of the pallbearers at General Grant's funeral. It was through General Buckner's request at Fort Donelson that General Grant became known as "Unconditional Surrender Grant." In reply to Buckner's inquiry as to what terms he would receive if he surrendered, Grant replied, "No other terms than an unconditional surrender can be accepted. I propose to move immediately upon your works." Grant and Buckner had been at West Point together and had always remained firm friends. General Buckner was the last surviving major-general of the Confederacy at the time of his death.

BUCKWHEAT. Buckwheat, although valuable, is a minor crop in all countries and data regarding its production are not generally published. It is largely grown as a catch crop and the acreage devoted to it is determined to a considerable extent by seasonal conditions. The production of buckwheat in the United States in 1914 as reported by the Department of Agriculture amounted to 16,881,000 bushels. This crop was grown on 792,000 acres, making the average yield 21.3 bushels per acre. These figures represent a decrease in area of 13,000 acres and an increase in production of more than 3,000,000 bushels as compared with the crop of the year before, when the average yield per acre was only 17.2 bushels. Based on the prices paid farmers on Dec. 1, 1914, which averaged 76.4 cents per bushel, the value of the crop amounted to $12,892,000, the highest during the past 45 years. New York and Pennsylvania continued to be the leading buckwheat States, their production representing almost one-half of the total production of the country. Michigan, Ohio, Virginia, West Virginia, and Wisconsin rank next in the production of this crop, but none of these States produces over one-fifth the quantity produced in either New York or Pennsylvania. In about one-half of the States buckwheat is grown in such small quantities that the production does not enter into the crop returns. In sections where farmers are familiar with its culture and where seed is readily obtainable, buckwheat is used as a green manure to supply vegetable matter to the soil. Experiments conducted by the Connecticut Experiment Station during the year showed that the crop ranked high in the production of dry vegetable matter.

BUFFALO, N. Y., CHARTER. See MUNICIPAL GOVERNMENT.

BUILDING. See ARCHITECTURE; FINANCIAL REVIEW.

BUILDING OPERATIONS. On account of the financial and commercial conditions prevailing in the United States during 1914, building operations fell off materially in amount from 1913. Nevertheless, conditions were better than were generally supposed, and the returns from the leading cities in the United States, received and compiled by the *Engineering News*, were of unusual interest in view of the financial depression. The least percentage of shrinkage was shown in the Central States, where returns from 154 cities with a population of 26,664,539, or about half the urban population of the United States, show that plans were filed in 1914 for buildings estimated to cost $771,017,852, as compared with $838,945,302 in 1913. In the Eastern States 59 cities reported plans filed in 1914 aggregating $326,957,204 as compared with $366,084,621 in the previous year, and in the Central States there were filed in 46 cities plans calling for construction estimated at $290,281,422 as compared with $292,128,028 in 1913. In the South in 30 cities 1914 operations were estimated to involve $57,532,371 as compared with $66,572,691 in the previous year. A heavy loss was to be noted on the Pacific Coast, especially at Los Angeles, Cal. In 19 cities the building returns in 1914 called for $96,246,855 of new construction as compared with $114,159,962 in 1913. The returns for the more important cities of the United States are given in the accompanying table.

BUILDING OPERATIONS IN THE U. S.
1913 AND 1914

Statistics of Plans Filed. Compiled by *Engineering News*

EASTERN STATES

***Population**	*City—*	*Building* *1914*	*Operations* *1918*
100,253	Albany, N. Y.	$6,294,738	$9,016,428
52,127	Altoona, Pa.	1,077,725	1,016,428
31,267	Amsterdam, N. Y.	1,250,000	1,500,000
34,668	Auburn, N. Y.	352,432	301,104
558,485	Baltimore, Md.	11,828,876	9,110,824
48,443	Binghamton, N. Y.	2,225,646	1,942,790
670,585	Boston, Mass	20,520,555	17,582,880
102,054	Bridgeport, Conn.	3,665,482	2,949,177
56,878	Brockton, Mass.	1,215,689	1,240,960
423,715	Buffalo, N. Y.	10,709,006	12,108,248
104,839	Cambridge, Mass.	6,800,105	6,588,685
22,754	Central Falls, R. I.	201,380	373,455
32,452	Chelsea, Mass.	722,150	440,775
38,537	Chester, Pa.	1,221,200	623,000
21,839	Cumberland, Md.	833,168	645,018
28,523	Easton, Pa.	851,000	910,000
34,371	E. Orange, N. J.	1,768,586	1,712,981
73,409	Elizabeth, N. J.	1,346,933	2,479,664
64,186	Harrisburg, Pa.	1,269,500	1,467,040
98,915	Hartford, Conn.	4,044,481	5,795,851
44,115	Haverhill, Mass.	1,149,985	1,015,115
70,324	Hoboken, N. J.	768,842	492,260
57,730	Holyoke, Mass.	1,183,271	1,379,882
267,779	Jersey City, N. J.	3,501,505	5,551,245
18,659	Kearney, N. J.	535,755	729,978
47,227	Lancaster, Pa.	689,956	688,629
85,892	Lawrence, Mass.	1,088,730	741,560
70,063	Manchester, N. H.	1,586,347	1,652,889
28,150	Medford, Mass	1,474,495	1,621,047
847,469	Newark, N. J.	9,472,409	16,817,978
96,652	New Bedford, Mass.	8,039,736	8,067,700
43,916	New Britain, Conn.	1,214,840	1,042,325
133,605	New Haven, Conn.	4,879,842	3,620,061
27,149	Newport, R. I.	565,466	1,049,128
28,867	New Rochelle, N. Y.	617,055	861,128
4,766,883	New York—		
	Bronx	20,296,848	20,072,489
	Brooklyn	38,866,890	30,720,101
	Manhattan	45,470,965	72,970,685
	Queens	18,311,450	17,507,955
	Richmond	2,272,898	3,377,198
30,445	Niagara Falls, N. Y.	1,222,727	1,571,855
54,773	Passaic, N. J.	857,849	958,264
125,600	Paterson, N. J.	1,544,086	1,520,914
1,549,008	Philadelphia	34,940,980	40,188,860
533,905	Pittsburgh, Pa.	18,194,682	15,858,848
20,550	Plainfield, N. J.	549,213	911,750
27,936	Poughkeepsie, N. Y.	692,040	1,077,785
32,642	Quincy, Mass.	1,417,448	1,158,022
96,071	Reading, Pa.	1,147,448	848,850
218,149	Rochester, N. Y.	8,733,257	9,684,124
129,867	Scranton, Pa.	3,409,920	1,480,231
88,926	Springfield, Mass.	4,905,034	5,303,620
28,836	Stamford, Conn.	1,601,231	1,305,100
137,249	Syracuse, N. Y.	2,838,973	4,521,198
96,815	Trenton, N. J.	1,736,502	2,068,098
76,813	Troy, N. Y.	480,880	2,566,178
74,419	Utica, N. Y.	1,791,482	4,452,947
27,834	Waltham, Mass.	590,490	472,655
67,105	Wilkes-Barre, Pa.	1,145,209	1,922,848
18,924	Wilkinsburg, Pa.	488,400	385,485
31,860	Williamsport, Pa.	255,835	686,995
145,986	Worcester, Mass.	4,808,858	4,902,618
44,750	York, Pa.	485,791	684,510
	CENTRAL STATES		
69,067	Akron, O.	$3,788,500	$5,226,925
29,807	Aurora, Ill.	985,921	783,865
45,166	Bay City, Mich.	404,185	891,765
25,768	Bloomington, Ill.	298,000	560,200
50,217	Canton, O.	1,405,445	1,006,025
32,811	Cedar Rapids, Ia.	1,788,000	1,816,000
2,185,183	Chicago, Ill.	83,262,110	89,169,077
363,591	Cincinnati, O.	8,785,158	8,331,827
560,663	Cleveland, O.	27,308,960	23,851,160
181,511	Columbus, O.	6,895,061	5,508,858
27,871	Danville, Ill.	467,504	421,268
43,028	Davenport, Ia.	1,872,172	1,428,921
116,577	Dayton, O.	2,642,569	4,000,000
86,368	Des Moines, Ia.	1,987,144	1,755,759
465,766	Detroit, Mich.	26,845,225	30,199,758
78,446	Duluth, Minn.	2,877,808	4,097,221
58,547	East St. Louis, Ill.	970,868	1,021,118
24,978	Evanston, Ill.	2,818,695	2,069,741
38,550	Flint, Mich.	800,000	500,000
63,933	Fort Wayne, Ind.	2,847,885	2,130,972
112,571	Grand Rapids, Mich.	3,621,919	4,168,000
35,279	Hamilton, O.	501,856	484,855
233,650	Indianapolis, Ind.	7,792,808	9,861,978
82,331	Kan. City, Kan.	1,076,463	1,252,859
248,381	Kan. City, Mo.	17,204,970	10,578,193
20,081	LaFayette, Ind.	735,000	191,014
43,973	Lincoln, Neb.	1,003,287	1,678,350
25,531	Madison, Wis.	1,374,634	1,372,882
378,857	Milwaukee, Wis.	9,783,921	18,619,559
301,408	Minneapolis, Minn.	15,214,525	12,857,935
24,199	Moline, Ill.	959,524	1,624,697
16,185	Norwood, O.	689,011	813,340
19,444	Oak Park, Ill.	2,311,490	2,244,898
124,096	Omaha, Neb.	4,610,456	4,110,738
66,950	Peoria, Ill.	3,269,220	2,588,517
22,324	Richmond, Ind.	400,000	500,000
77,403	St. Joseph, Mo.	627,574	876,003
687,029	St. Louis, Mo.	12,568,584	15,850,012
214,744	St. Paul, Minn.	13,651,986	9,441,221
50,510	Saginaw, Mich.	679,755	524,019
47,828	Sioux City, Ia.	1,972,952	2,076,058
51,678	Springfield, Ill.	1,056,320	804,014
40,384	Superior, Wis.	1,541,619	1,574,857
168,497	Toledo, O.	6,085,182	5,886,291
43,684	Topeka, Kan.	547,280	928,767
79,066	Youngstown, O.	3,055,221	2,849,006
	SOUTHERN STATES		
18,762	Asheville, N. C.	$776,017	$624,863
154,839	Atlanta, Ga.	4,637,352	5,110,324
20,640	Beaumont, Tex.	712,864	303,880
132,685	Birmingham, Ala.	3,143,250	5,966,851
34,014	Charlotte, N. C.	1,041,777	1,490,371
44,604	Chattanooga, Tenn.	1,057,087	1,046,930
20,554	Columbus, Ga.	487,516	428,174
52,270	Covington, Ky.	553,480	529,833
92,104	Dallas, Tex.	5,248,610	8,476,080

*Population	City—	Building 1914	Operations 1913
18,241	Durham, N. C.....	354,684	252,105
39,279	El Paso, Tex......	1,934,697	1,341,264
23,975	Fort Smith, Ark...	158,464	446,782
73,312	Fort Worth, Tex...	2,181,931	2,113,553
31,161	Huntington, W. Va.	1,153,497	1,175,520
57,699	Jacksonville, Fla...	1,667,470	2,974,652
36,346	Knoxville, Tenn...	408,947	410,698
223,928	Louisville, Ky....	4,389,745	4,034,180
131,105	Memphis, Tenn. ..	2,946,764	4,094,358
51,521	Mobile, Ala.......	578,135	607,145
25,278	Muskogee, Okla. ..	104,550	338,574
339,075	New Orleans, La...	2,959,751	4,092,828
30,309	Newport, Ky......	172,000	128,000
67,452	Norfolk, Va.......	2,014,681	2,554,723
22,982	Pensacola, Fla.....	446,719	375,341
127,628	Richmond, Va. ..	3,283,845	3,182,480
65,064	Savannah, Ga. ...	1,385,680	1,321,815
28,015	Shreveport, La. ..	1,270,957	1,352,172
37,782	Tampa, Fla.	1,873,071	1,484,064
18,182	Tulsa, Okla.	1,686,550	1,517,118
331,069	Washington, D. C..	8,962,780	9,270,518
	WESTERN STATES		
23,383	Alameda, Cal.	$345,563	$571,614
40,434	Berkeley, Cal......	1,821,100	2,236,700
17,358	Boise, Idaho	163,055	476,341
29,078	Col. Springs, Col...	444,350	411,628
213,381	Denver, Col.	3,730,458	3,797,148
24,892	Fresno, Cal.	1,122,505	1,776,666
319,198	Los Angeles, Cal...	17,282,881	30,636,921
150,174	Oakland, Cal.	4,619,885	8,569,908
25,580	Ogden, Utah......	840,680	894,811
64,205	Oklahoma, Okla...	1,972,442	174,727
30,291	Pasadena, Cal. ...	2,133,781	2,787,507
207,214	Portland, Ore.	9,334,075	12,972,090
44,696	Sacramento, Cal....	2,329,978	3,416,058
92,777	Salt Lake City, Utah	2,983,246	2,053,860
39,578	San Diego, Cal....	3,116,176	7,135,299
416,912	San Francisco.....	28,177,572	21,036,264
237,194	Seattle, Wash.	12,655,600	9,321,115
104,402	Spokane, Wash. ..	984,047	3,428,208
83,743	Tacoma, Wash.....	2,189,511	2,474,102

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* Census of 1910.

BULGARIA. One of the "Balkan States"; a constitutional European monarchy. The capital is Sofia.

Area and Population. Previous to the Balkan War the area and population (the *de facto* population according to the census of Dec. 31, 1910) were as shown in the table below.

	Area Sq. kil.	Area Sq. m.	Pop. 1910
Bulgaria, Northern	63,751.1	24,614	3,095,735
Eastern Rumelia	32,594.4	12,585	1,241,778
Total Bulgaria	96,345.5	37,199	4,337,513

By the treaty of Constantinople, signed Sept. 29, 1913, the Turco-Bulgarian frontier was defined. The new frontier follows the course of the Maritza from its mouth to Mandra, where it crosses the railway and runs north and slightly west, passing close to Ortakeui, which remains Bulgarian. Thence the line goes to Lefke, almost due north of Mustapha Pasha. From Lefke the line runs to the nearest point of the old Turko-Bulgarian boundary, which is followed as far as the neighborhood of Kaibilar. From Kaibilar it runs east to the mouth of the Resvaya at Sveti Stefan, with a slight deviation southward so as to leave the Malka Tirnovo district to Bulgaria. The Rumano-Bulgarian frontier starts from the Danube above Turtukar and ends on the Black Sea, south of Ekrene. The Serbo-Bulgarian frontier starts from the Partarica Mountain, continues along the old Turko-Bulgarian frontier and the watershed between the Varda and the Sturma (the upper valley of the Strummtza remaining Servian), and ends at the mountain of the Belashictza. The Græco-Bulgarian frontier starts on the crest of the Belashictza range and ends at the mouth of the Nestor at the Ægean Sea.

Of the total population in 1910, 3,497,794 were Bulgarians, 466,117 Turks, 121,435 Tziganes, 79,787 Rumanians, 43,273 Greeks, 40,118 Jews, 21,145 Pomacs, 18,050 Tartars, 12,914 Armenians, etc. Sofia had, in 1910, 102,812 inhabitants; Varna, 47,981 inhabitants; Ruschuk, 36,255; Slivno, 25,142; Shumla, 22,225; Plevna, 23,049; Philippopolis, the capital of Eastern Rumelia, 47,981. There were in 1911, 41,868 marriages, 176,909 living births, and 74,860 deaths. No statistics for the movement of the population are given for the year 1910.

Education, Etc. Primary education is free and nominally compulsory, with fees in higher grades only, these fees being confined to the rich. The State supplies two-thirds, local taxation one-third, of the cost of primary instruction; one-half of the cost of secondary instruction is borne by the State. Foreign schools are numerous, special and technical schools few. There were in 1910–11, 4674 elementary schools, with 8686 teachers and 453,592 pupils. There is a university at Sofia, with three faculties; attended in 1911–12 by 2260 students, of whom 217 were women.

The national religion is the Orthodox Greek, but the Bulgarian Church is not included in the Orthodox communion. Of the total population in 1910, 3,643,951 belong to the Orthodox church, 32,130 to the Roman Catholic Church, 12,270 were Gregorian Armenians, 6252 Protestants, 40,070 Jews, 602,101 Mohammedans.

Agriculture. Agriculture is the occupation of about five-sevenths of the population. Of the total area, 3,130,279 hectares in 1909 were under cultivation, 742,498 were fallow—total, 3,872,777 hectares. Of the total area under cultivation, 2,394,252 hectares were planted to cereals, 523,371 to forage plants, 85,240 to vines, 60,259 to potatoes and other roots, 25,231 to melons, etc., 13,215 to industrial plants, 11,088 to legumes, 8277 to orchards and gardens, and 7621 to rose-fields. The following table shows main crops with area and yield in 1910–11 and 1912–13, with yield per hectare in 1912–13:

	Hectares		Quintals		Qs.
	1911-12	1912-13	1911-12	1912-13	ha.
Wheat	1,120,500	1,030,000	17,350,000	16,500,000	16.0
Rye	215,000	185,000	3,150,000	2,750,000	14.9
Barley	260,000	230,000	4,000,000	3,500,000	15.2
Oats	160,000	170,000	1,750,000	2,000,000	11.8
Corn	650,000	650,000	14,000,000	11,500,000	17.7
Rice	3,000	3,000	30,000	35,000	17.7

In 1905 there were 2,167,275 cattle, 8,081,816 sheep, 536,616 horses, 124,216 asses, 11,828 mules, 1,370,201 goats, and 463,241 swine.

Besides the coal mines at Pernik, coal has been found near Trevna. Iron in large quantities, gold, silver, lead, manganese, and copper are found. About 1,000,000 cubic meters of stone are quarried annually. Woolen goods, cottons, cord, and cigarettes are manufactured.

Commerce and Communications. The commercial statistics which follow are from an English source and are given in pounds sterling. Import and export values for three years:

	1910	1911	1912
Imports	£7,094,268	£7,973,792	£8,524,408
Exports	5,162,088	7,385,856	6,257,264

The leading imports in 1912 were cattle, £117,288; cereals, £116,692; building timber, £557,988; machinery, implements, etc., £1,051,836; textiles, £2,737,276; hides, skins, leather, etc., £529,004. The principal articles of export were wheat, £1,767,904; corn, £295,924; live stock, £70,168; silk cocoons, £56,788; hides, skins, etc., £107,044; attar of roses, £464,828.

Trade by principal countries is given below, with values in thousands of pounds sterling.

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
	£	£	£	£
U. Kingdom	1,201,372	1,270,852	969,460	656,356
Austria-Hun.	1,928.624	2,056,132	422,688	620,912
Belgium	201,892	235,880	2,151,580	1,673,712
Germany	1,593,468	1,741,048	916,460	983,352
France	997,080	599,932	444,760	303,728
Italy	364,732	529,484	......	......
Turkey	639,444	543,656	1,168,396	680,932
Other countries	1,047,180	1,547,924	806,018	1,002,968
Total	7,973,792	8,524,408	7,385,356	6,257,264

Vessels entered in the 1911 trade, 18,818, of 4,951,452 tons; cleared, 18,792, of 4,934,559.

There were in operation in 1913, 1384 miles of railway; under construction, 239 miles. State telegraph wires (1911) 9453 miles, with 374 telegraph stations. Telephone lines, 1383 miles, with 7297 miles of wire. Post offices, 2245.

FINANCE. The lev, worth 19.3 cents, is the monetary unit. In the table below, in pounds sterling, are given revenue and expenditure for three successive years.

	1911	*1912*	*1913*
Revenue	£7,137,812	£7,610,920	£5,765,344
Expenditure	7,135,818	7,557,200	4,732,882

The debt stood, Jan. 1, 1914, at £35,145,572.

ARMY. With the termination of the wars in the Balkans in 1913, the Bulgarian army which was recruited by conscription, was maintained ready for any possible emergency, which political developments in Europe might bring about. The war estimates for 1914–15 were 52,972,503 francs, or an increase over those of the preceding year of nearly 13,000,000 francs, an amount which was made necessary by the increased territory resulting from the late war and the expense and deficiency resulting therefrom. For the new territory in Thrace a new infantry division, No. 10, was to be created, and the 40 existing infantry regiments in 1914 which had each two battalions were to be increased by a third, of two companies, to be formed from the cadres then existing. All of the regiments of cavalry were to be made up to four squadrons each, and to each a machine gun detachment was to be allotted. The entire cavalry force was to be organized in three brigades. The artillery was to be given 15 new field batteries, and one new horse battery, the latter on mobilization forming a part of the horse artillery brigade to be attached to the cavalry. To the 12 existing mountain batteries eight new ones were to be added, and the whole was to be organized in three regiments. The fortress artillery was also to be increased by three brigades. The Bulgarian army in previous years had suffered from the fact that their field guns, while of modern quick-firing type, were not supplied with smokeless powder. In the earlier battles, and also at Tschataldja they were unable to locate the Turkish artillery, so that the latter guns gained the preponderance. While they were sometimes more successful against the Turkish infantry, yet they gave no decided support to their own infantry who acted impetuously, so that there was no real coöperation. These defects of tactics and material were being remedied in 1914.

GOVERNMENT. Bulgaria has been an independent monarchy since Oct. 5, 1908, when Prince Ferdinand assumed the title of King of the Bulgars. Eastern Rumelia is now an integral part of Bulgaria under the administration at Sofia, now the only capital. The executive authority rests in the sovereign acting through a responsible council of eight ministers. He must, except in the case of the present ruler, profess the Orthodox creed, and must reside permanently in the country. Reigning sovereign in 1914, Ferdinand I, born Feb. 26, 1861; married (1) April 20, 1893, to Marie Louise of Parma, and (2) Feb. 28, 1908, to Eleonore of Reuss Köstritz. Heir-apparent, Prince Boris, born Jan. 30, 1894.

The legislative power is vested in a single-chamber (Sobranje), whose members number one to every 20,000 of the population and who are elected by universal manhood suffrage. The ministry, first appointed July 20, 1913, and reappointed Jan. 5, 1914, was composed as follows: Dr. V. Radoslavoff, Premier and Minister of the Interior, and Minister for Foreign Affairs *ad int.;* Dr. D. Tontcheff, finance; P. Pecheff, instruction; Gen. C. Bovadjieff, war; J. Bakaloff, commerce; Dr. P. Dintcheff, public works; N. Apostoloff, railways.

HISTORY. After having tendered on January 2 the resignation of his cabinet, and after having been promptly reappointed by King Ferdinand, M. Radoslavoff on January 12 read to the Sobranje his ministerial declaration of policy, wherein he promised to pursue a peaceful policy, although with no intention of abandoning the claim for a revision of the treaty of Bucharest; to meet the financial situation he proposed new taxation, a foreign loan of $50,000,000, and an issue of treasury bonds; the burden of taxation would be shifted to the wealthier classes by means of taxes on income and capital; and a Parliamentary inquiry would be instituted for the purpose of ascertaining the causes of Bulgaria's disaster in the Balkan War of July, 1913, the persons who were responsible for that disaster, and the extent to which public funds had been maladministered during the war. M. Tontcheff, as Minister of Finance, then proposed what amounted to a vote of confidence in the government, a vote of two months' supplies. This being refused, the Premier, with the authorization of the King, immediately dissolved the Sobranje.

The ensuing general elections resulted in the return of 123 Ministerialists, 50 Agrarians, 28 Democrats, 21 Socialists, 9 Nationalists, 5 Radicals, and 3 Zankovists, thus giving the government a clear majority of 12 votes. An extraordinary session of Parliament was called for April 2 to deal with the Budget, to authorize a loan, and to ratify the treaties of Bucharest and Constantinople. On May 8 a motion was proposed in the Sobranje to institute a Parliamentary Commission to inquire how far the Gueshoff and Daneff cabinets had been responsible for the calamitous war of the previous summer. The ensuing debate was memorable in many respects: it made the fact manifest that all parties in Bulgaria were anxious to increase the strength of their country; and it brought to light not a few interesting circumstances connected with the Balkan War. Evidence was adduced to prove that if the Gueshoff government had so desired it could have made peace immediately after the battle of Lule Burgas, since Kiamil Pasha was then ready to consent to the Enos-Midia frontier. Dr. Daneff, in a four-hour speech, affirmed that Gueshoff's ministry had twice unsuccessfully attempted to bring Rumania into the Balkan Alliance; Dr. Daneff also declared that he had no information about an order given General Savoff to precipitate the Balkan War in 1913. Dr. Gennadieff, leader of the Stambolovists, delivered a remarkable three days' oration, in which the sad events of 1913 were masterfully reviewed, and the Bulgarian people urged to strive without discouragement for the greatness of their native land. Finally a Commission of thirty members was appointed by the Sobranje to investigate the culpability of the politicians who conducted Bulgaria into the fratricidal conflict with Greece and Servia. The ministers in question were, as a result of the Commission's findings, not found guilty of penal offenses, but neither were they cleared of all blame.

Meanwhile a state trial before the State Tribunal, had been proceeding along somewhat similar lines and had likewise yielded interesting disclosures regarding the Balkan War. Strictly speaking, the attention of the State Tribunal should have been confined to the period 1903–08, when the Stambolovist party was in power, for it was during that period that the five defendants—General Savoff (several times minister of war, commander-in-chief during the first Balkan War), General Ratcho Petroff (premier 1900–01, 1903–06), Dr. Gudeff (premier 1907–08), Dr. Gennadieff (various cabinet offices), and M. Halatcheff—were alleged to have misused public funds and committed various corrupt practices. But during the proceedings, subsequent events were brought into discussion, and important statements were made, especially by General Savoff, who declared that he had disapproved the withdrawal of the Bulgarian troops from Thrace in May, 1913, because he anticipated a renewal of hostilities by Turkey, but had effected the withdrawal at the insistent command of the king and cabinet. In June, obedient to the ministry's behest, he had carefully prepared a plan of campaign against Greece and Servia, according to which he would have captured Nish within a week; then suddenly, on July 1, he had been superseded in command by General Radko Dimitrieff, who had conducted the July war to its disastrous issue.

On July 1, the anniversary of the outbreak of the second Balkan War, a demonstration was held in Sofia by the Broad Socialists, Radicals, and Agrarians, who condemned monarchism as responsible for the fatal error. On July 12, M. Tontcheff signed a loan agreement with a group of German bankers, whereby Bulgaria would receive a loan of $100,000,000 (interest at five per cent, rate of issue at 84). In return, the German banks would receive the concession for the Porto Lagos-Haskovo railway, and two other railways, with a guarantee of 10 per cent profit on the capital, and the right of developing the Pernik coalfields conjointly with the Bulgarian Government. The question of securing the Sobranje's ratification for this agreement speedily became a political issue of the first magnitude when the Opposition decided to combat the German loan, and the Russian Legation issued a semi-official *communiqué* stating that a group of French banks were prepared to grant the loan to Bulgaria without exacting the sweeping industrial concessions which the Germans demanded. The Russians were accused of entering even more openly into Bulgarian politics by holding conferences of the Opposition leaders at the Russian Legation for the purpose of naming a new cabinet. So acute was the situation, that when the loan was submitted to the Sobranje on July 15, the precaution was taken of placing special police guards around the hall. The sitting was thrown into turmoil when the leader of the "Narrow Socialists" loudly accused the bourgeois Opposition parties of acting as the dupes of Russia. Nor would the Opposition allow the sitting to be resumed in an orderly fashion, but overturned desks, flung books through the air, and shouted incessantly until a hasty and undignified adjournment was taken. At a subsequent sitting the ministerial party succeeded in casting its solid majority vote in favor of the German loan agreement, and on July 17 a Royal Ukase gave formal sanction to the measure.

The lingering resentment with which Bulgaria continued to regard Greece after the second Balkan War was manifested on June 3, when the Greeks were celebrating the name day of their King, Constantine, and an angry mob of Bulgarians in Sofia tore down the Greek flag from the Greek church. In Varna the mayor himself led an attack on the four Greek churches and schools in that city. For these affronts the Bulgarian Premier communicated formal apologies to the Greek government; at the same time he requested Greece to abandon the harsh policies which drove thousands of Bulgars from Greek Macedonia into Bulgaria, where they stirred up hatred against Greece. It was hoped that Græco-Bulgarian relations might be improved by the resumption of diplomatic relations between Greece and Bulgaria, which took place on July 24, when the Greek minister plenipotentiary, M. Naoum, arrived at Sofia, and the Bulgarian minister, M. Passaroff, took up his duties in Athens.

There was also some bitterness against the neighboring state of Rumania as the consequence of the recent war. In the slice of the Dobrudja which Rumania had taken from Bulgaria, Bulgarian churches were being Rumanized; and numbers of discontented Bulgarians from this region came to spread the tale of their woes in Bulgaria. Both governments, however, seemed to be animated by a sincere desire for peace, and they exhibited a most commendable calmness in discussing two frontier accidents which occurred in July. Announcement of an extremely important event in the history of Bulgaria's relations to Rumania was reported to have emanated from the Bulgarian minister at Petrograd late in December; Rumania, he was credited with saying, had arranged to restore to Bulgaria the portion of the Dobrudja annexed by the former country after the second Balkan War. Of what diplomatic negotiations this decision was the result, and of what international developments it might be taken as the harbinger, no information was vouchsafed.

Immediately after the outbreak of the war between Austria-Hungary and Servia (July 28), Dr. Radoslavoff informed the Democratic leader, M. Malinoff, that Bulgaria would maintain strict neutrality. To this policy the Opposition strongly rallied. A few days later, the Premier declared before the Sobranje that, (1) Bulgaria would be neutral, (2) that the border incidents with Rumania had been satisfactorily settled, (3) that relations with Turkey were friendly, (4) that relations with Greece were not bad, (5) that the policy of the cabinet was purely Bulgarian. The Chamber then voted a military credit of $30,000,000 in addition to $50,000,000 for requisitions made during the Turco-Balkan and Balkan Wars. On October 28 the Narodne Sobranje was convened for its 17th regular session. The Speech from the Throne not only reiterated the assurance of Bulgaria's neutrality, but proposed to take up the regular work of legislation as if no war were in existence. Bills were foreshadowed, (1) for accident insurance, (2) for the pensioning of laborers employed by the State, (3) for assuring safer conditions of labor, and (4) for guaranteeing the payment of laborers' wages.

The entry of Turkey into the War of the Nations early in November caused a certain amount of apprehension regarding the attitude which Bulgaria might take. During the last year persistent rumors had affirmed the existence of a secret Turco-Bulgarian understanding or alliance against the other Balkan nations. Before Turkey's declaration of war Bulgaria had laid herself open to charge of having infringed neutrality by permitting 600 German marines to pass through Bulgarian territory *en route* for Constantinople, it being notorious that these Germans were destined for the Turkish navy. Of this charge the Bulgarian government easily cleared itself. And a few days after Turkey took up arms, M. Radoslavoff quieted all apprehensions by declaring that Bulgaria had no treaty obligations binding her to fight in aid of Turkey, and would remain neutral. Bulgaria's neutrality, he said, was now desired by both the Triple Alliance and the Triple Entente, although earlier in the war both groups had essayed to involve Bulgaria.

BUMPUS, HERMON CAREY. An American educator, elected in 1914 president of Tufts College. He was born in Buckfield, Me., in 1862, and graduated from Brown University with the degree of Ph.D. in 1884, taking post-graduate studies at Clark University. From 1886 to 1889 he was professor of biology at Olivet College, and in the latter year was appointed fellow at Clark University, serving for one year. He became assistant professor of zoölogy at Brown University in 1890 and in the following year was appointed associate professor, one year later becoming professor of comparative anatomy at this university, holding the chair until 1901. During the same period he was director of the biological laboratory of the United States Fish Commission at Woods Hole, Mass., and until 1902 was assistant to the president and curator of the department of invertebrates of the American Museum of Natural History in New York. From 1902 to 1911 he was director of this museum, in the latter year being appointed business manager of the University of Wisconsin, which position he held at the time of his election as president of Tufts College. From 1905 to 1911 he was a member of the faculty of pure science at Columbia University. Dr. Bumpus received the degree of LL.D. from Clark University in 1909, is one of the best known of American scientists, and is a member of many American and foreign scientific societies. He is the author of *A Laboratory Course in Invertebrate Zoölogy* (1893), and numerous monographs and articles on biological subjects.

BURDETTE, ROBERT JONES. An American clergyman, humorist, and lecturer, died Nov. 19, 1914. He was born in Greensboro, Pa., in 1844, but removed in boyhood to Peoria, Ill. He was educated in the public schools. After engaging in several unsuccessful mercantile enterprises he entered journalism in 1870 as night editor of the Peoria *Transcript*, subsequently held the editorship of another paper in the same city, and then became a member of the staff of the Burlington *Hawkeye*. His contributions to this journal gained him a wide reputation as a humorist. At the same time he contributed to the Brooklyn *Eagle* and to the Los Angeles *Times*. In 1876 he began his career as a lecturer and followed this with great success, for many years traveling all over the United States. He then resumed his literary work and his humorous articles were widely syndicated in the papers of the country. In 1903 he was ordained as a minister in the Baptist denomination, and started the Temple Baptist Church in Los Angeles, where he served as pastor until 1909, when he was made pastor emeritus, being incapacitated for work by an injury to his spine through a fall. For several years he served as city commissioner of Pasadena, Cal. His published writings, which had a wide circulation, include: *Hawkeyetems* (1877); *The Rise and Fall of the Mustache; Hawkeyes* (1879); *Chimes from a Jester's Bells; Smiles Yoked with Sighs* (1900); *The Silver Trumpets* (poems, 1911); *Old Time and Young Tom* (1912). He was a member of several learned societies.

BUREAU OF CORPORATIONS. See TRUSTS.

BUREAU OF SOCIAL HYGIENE. See PROSTITUTION.

BURLEIGH, BENNET. An English war correspondent and writer, died June 17, 1914. He was born in Glasgow, Scotland, in 1844, and when still a young man came to the United States and took part in the Civil War on the Confederate side. He was twice captured and sentenced to death. He represented the *Central News* throughout the first Egyptian war and was present at the battle of Tel-el-Kebir. In 1882 he joined the staff of the *Daily Telegraph* and represented that paper in the second Egyptian war. He also reported the French campaign in Madagascar and accompanied the desert column from Korti Metammah in 1884. He was correspondent for the *Daily Telegraph* with the Ashanti expedition, in the Spanish Riff campaign, in the Greek war, with the Atbara expedition, in the Egyptian war, in the South African war, the Somaliland war, the Russo-Japanese war, the Tripoli campaign, and the recent Balkan war. He was the author of numerous books dealing with the various campaigns in which he took part. He was the oldest and most widely known of English war correspondents. His publications include *Two Campaigns*, and *Empire of the East* (1905).

BUTTER. See DAIRYING.

BYWATER, INGRAM. An English Greek scholar, died December, 1914. He was born in London, June 27, 1840. After studying at University and King's College schools, London, he graduated M.A. from Queen's College, Oxford, in 1863. He was then appointed fellow of Exeter College; served as tutor for several years; and became university reader in Greek in 1883. From 1893 to 1908, when he retired, he was regius professor of Greek at Oxford, and a student of Christ Church. He received the honorary degree of Litt.D. from Dublin, Durham, and Cambridge, and that of Ph.D. from Athens. Bywater was one of the great classical scholars of his day. His publications, which deal chiefly with Greek philosophy, include: *Heracliti Ephesii Reliquiæ* (1877); *Prisciani Lydi quae extant*, edited for the Berlin Academy (1886); Aristotle's *Ethica Nicomachea* (1890); *Contributions to the Textual Criticism of the Nicomachean Ethics* (1892); and a valuable edition of Aristotle's *Poetics* under the title *Aristotelis de Arte Poetica Liber* (1897), which was republished in 1909 as *Aristotle on the Art of Poetry*, with a critical introduction, translation, and commentary.

CADWALADER, JOHN LAMBERT. An American lawyer, died March 11, 1914. He was born in Trenton, N. J., in 1837, and graduated from Princeton College in 1856. He studied law at the Harvard Law School, graduating in 1860, and immediately entered the practice of law in New York City. In 1874 he was appointed assistant Secretary of State under Hamilton Fish in President Grant's Administration, and held the post until 1877. He then returned to his law practice and never again held public office, although he was mentioned for many places of prominence. He, with Charles E. Strong, formed the law firm of Strong and Cadwalader, which continued under this name until Jan. 1, 1914, when the name was changed to Cadwalader, Wickersham and Taft. Cadwalader was at one time president of the Bar Association of the City of New York and was at the time of his death president of the New York Public Library. He worked out the plans for combining the Astor, Lenox, and Tilden Foundations in one great public library and was instrumental in putting the plan in execution. He also had much to do with the creation of the present library building at Fifth Avenue and Forty-second Street. He was a trustee of the Metropolitan Museum of Art, of the New York Zoölogical Society, of the Carnegie Institution of Washington, and of Princeton University. He was also a member of several patriotic and learned societies. He received the degree of LL.D. from Princeton University in 1897, and from the University of Pennsylvania in 1908. He was a benefactor of Princeton and in 1913 made this university a gift of $30,000.

CALDWELL, ROBERT TOWNLEY. An English scholar and educator, died Sept. 8, 1914. He was born in Barbados in 1843, and received his early education at St. John's College, Winnipeg, Canada, his father being at that time Lieutenant-Governor of Manitoba. While still a young man he removed to England, and in 1862 entered as a pensioner at Corpus Christi College, Cambridge. In 1865 he was elected to a Fellowship and mathematical lectureship at this college. In 1871 he became Bursar of the college and for nearly thirty years managed the estates and finances of that institution. In 1892 he resigned his lectureship and his Bursarship lapsed in 1899. In 1906 he was elected Master of Corpus, and in this position he carried through many reforms which were greatly needed to modernize the teaching of the college. For many years he was commander of the Third Gordon Highlanders with the rank of colonel. He received degrees of LL.D. from Cambridge and Aberdeen Universities.

CALIFORNIA. POPULATION. The estimated population on July 1, 1914, was 2,757,895. The population in 1910 was 2,377,549.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	60,000	2,160,000	$1,879,000
	1913	55,000	1,815,000	1,597,000
Wheat	1914	400,000	6,800,000	7,072,000
	1913	300,000	4,200,000	3,990,000
Oats	1914	220,000	7,700,000	4,081,000
	1913	210,000	6,636,000	3,982,000
Rye	1914	8,000	136,000	116,000
	1913	8,000	120,000	90,000
Barley	1914	1,402,000	42,060,000	24,815,000
	1913	1,275,000	33,150,000	22,542,000
Rice	1914	15,000	800,000	800,000
	1913	6,100	293,000	293,000
Potatoes	...1914	75,000	10,350,000	7,245,000
	1913	68,000	8,092,000	5,664,000
Hay	1914	2,700,000	*a* 5,265,000	43,178,000
	1913	2,400,000	3,600,000	48,600,000
Cotton	1914	35,000	*b* 37,000	1,240,000
	1913	14,000	23,000	1,429,000

a Tons. *b* Bales.

MINERAL PRODUCTION. California is first among the States west of the Mississippi River and fifth among all the States in the value of its mineral production. Its preëminence during the last ten years has resulted from the large output of petroleum, in the production of which it leads all the other States, furnishing in 1913, 39.36 per cent of the total output in the United States, and 19.28 per cent of the value. Prior to 1903, when petroleum took first place among the mineral products of the State as regards value, gold was the chief mineral product, and although gold has fallen from first place, California continues to lead all the other States in the output of this metal. Moreover, California is one of the few States in which gold production is an important factor that did not show decreased production in 1913. The production of petroleum in 1913 was a little more than 45 per cent of the total mineral output of the State. The record shows an increase in the quantity of crude oil produced of over 10,500,000 barrels, or from 87,268,536 barrels in 1912 to 97,788,525 barrels in 1913. The value increased somewhat more in proportion, from $39,616,387 to $45,709,400. Kern County, which contains the Midway, Kern River, McKittrick, Sunset, and Lost Hills fields or districts, is by far the most important county in the production of petroleum, yielding 58 per cent of the total output in 1912 and 60 per cent in 1913. Fresno County, containing the Coalinga field, is second in importance, with 20 per cent of the total production. The remainder of the output comes from Los Angeles, Orange, Ventura, Santa Barbara, San Luis Obispo, and Santa Clara counties.

The production of gold in 1912 increased from 953,639 fine ounces, valued at $19,713,478, to 987,187 fine ounces, valued at $20,406,958 in 1913. Of the total gold production, about 55 per cent is derived from deep mines and about 45 per cent from placers. Third in importance among the mineral industries of the State is the manufacture of Portland cement, in which California ranks third in importance. The production in 1913 was 6,018,262 barrels, a decrease of 75,528 barrels from the production of 1912. The value, however, increased from $8,215,894 in 1912 to $8,896,734 in 1913. Other mineral products of great importance are clay and quarry products. California is the only producer of borax, magnesite, and chromic iron ore, and is the leading State in the production of asphalt, platinum, and quicksilver. The combined value of these products in 1913 was about $4,000,000, of which asphalt and borax contributed more than $3,200,000. The only other mineral product which had a value of more than $1,000,000 was natural gas, which showed an increase in value from $1,134,456 in 1912 to $1,883,450 in 1913. The other mineral products of commercial importance are coal, feldspar, fuller's earth, gems and gem materials, graphite, gypsum, infusorial earth, iron ore, lead, lime, manganese ore, mineral paints, mineral waters, pumice, pyrite, salt, sand and gravel, sand-lime brick, silver, tungsten ore, and zinc. The total value of the mineral products of the State increased from $93,219,149 in 1912 to $100,791,369 in 1913. The mines of the State showed an increased production in gold, silver, lead, and zinc and a decrease in copper in 1914, according to the estimates of the United States Geological Survey. The total value of these metals for 1914 is about $21,138,500 in gold and 1,987,700 ounces of silver, an increase of $731,500 in gold and 609,300 fine ounces of silver. California continues to be the first gold-producing State of the country. There were in 1914 about 800 producing mines, of which approximately half were deep mines and half placers of various kinds.

Notwithstanding the condition of the copper market, owing to the European war, during the later months of the year, the copper yield apparently fell off only about 560,000 pounds in 1914, compared with 1913. The estimated yield for the former year was 34,000,000 pounds. The output of lead in 1914 is estimated at 6,484,000 pounds, an increase of nearly 3,000,000 pounds from the production of 1913. Zinc showed an increase in output of about 1,050,000 pounds, or about 2,107,000 pounds.

EDUCATION. The total school population in 1914 was 513,319, including 7808 university students. The total enrollment in the public schools in the same year, including elementary, kindergarten, and high schools was 501,021, with an average daily attendance in these schools of 373,478. The teachers numbered 13,250 women and 2368 men. The average yearly salary of men teachers in the elementary schools was $1018 and of women $745, while in the high schools the men's salary was $1517 and the women $1125.

FINANCE. On June 30, 1913, the funded debt of the State consisted of bonds and special debt obligations to the permanent fund of the State university, the total amount being $10,178,250. The floating debt consisted of outstanding warrants, payable to the treasury of the State and of private trust liabilities. The total receipts for the biennial period July 1, 1910, to June 30, 1912, amount to $39,323,132, and the disbursements to $36,620,818, leaving a balance on hand on June 30, 1912, of $9,903,533. The balance at the beginning of this period was $7,201,219. The principal receipts are from franchises and from county taxes.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State are the following: Industrial Home for the Adult Blind; Whittier State School; Preston School of industry—all reform schools; Stockton State Hospital; Napa State Hospital; Agus State Hospital; Mendocino State Hospital, and Southern California State Hospital. The State prisons are at San Quentin and Falsam. The total number in all State institutions is about 14,000. The legislature of 1913 provided for a State training school for girls and a new psychopathic State hospital. The State Board of Charities was also given additional duties, including those of licensing maternal hospitals, boarding homes for children, etc.

POLITICS AND GOVERNMENT. The State legislature did not meet in 1914, as the sessions are biennial and the last was held in 1913. In comparison with the previous year, 1914 was comparatively quiet politically, although interest was not lacking on account of the State elections. Agitation on account of the alien land laws passed by the legislature of 1913 had become a national rather than State issue, and whatever developments there were are noted under *Foreign Relations* in the article UNITED STATES.

Governor Johnson was a candidate for renomination on a Progressive ticket, while Francis J. Heney was the Progressive candidate for United States Senator.

The Progressive party in its convention declared for a protective tariff "which shall equalize conditions of competition between the United States and foreign countries," and also urged the establishment of a permanent non-partisan tariff commission, wholly removed from the possibility of political pressure or improper business influence. The Republican platform also declared for an equalization of tariff duties and favored a return to the Republican policies of protection to American industry. In the Democratic platform a declaration was made of faith in the wisdom and patriotism of President Wilson and support was pledged to him in the discharge of his duties; special approbation was given to his Mexican policy, and a declaration was also made for the establishment of an American merchant marine. After one of the most progressive campaigns ever known in the State Governor Johnson was renominated in the primary elections held on August 27. At the same election Francis J. Heney was nominated for the Senate by the Progressives, Congressman Knowland by the Republicans, and James D. Phelan by the Democrats. The Republican and Democratic candidates for governor were Messrs. Fredericks and Curtin. The election of November 3, with a registration of over 1,000,000, was the first important one in which women of the State took part. The voting on November 3 resulted in the reëlection of Governor Johnson by 460,495 votes, compared with 271,990 votes for Fredericks, Republican, and 116,121 votes for Curtin, Democrat. James D. Phelan, Democratic candidate, was elected to the United States Senate, following a close contest in which Knowland was second and Heney, Progressive, third. A proposed Prohibition amendment to the constitution was defeated. As a result of the election the Progressives continued to control the State legislature on a joint ballot of 51.

OTHER EVENTS. A unique departure in legal procedure which caused much comment throughout the country was the appointment of a public defender in Los Angeles County. The duties of this official correspond roughly to those of the public prosecutor, but the public defender may accept cases brought to him by those unable to pay a lawyer in addition to those to which he is assigned by the court. In no case does the public defender undertake cases for those who can pay a private attorney. To fill this office Walton J. Wood, former deputy city attorney of Los Angeles, was appointed.

One of the most interesting events during the year was the outbreak on April 30, of what was supposed to be an extinct volcano, Mt. Lassen, in Northern California, 90 miles south of the Oregon line. On the date mentioned there was a slight disturbance in the crater of the volcano and nearly two weeks later there were eruptions. A series of these culminated on May 14, when clouds of smoke and steam, with stones and ashes, were thrown up. A party of eight men who were near the crater at the time of the explosion narrowly escaped death. (See VOLCANOES.) There were serious floods resulting from unusual heavy rainfalls in Los Angeles and other cities in that section of the State in February. These resulted in the death of six persons and the loss of property valued at millions of dollars.

STATE OFFICERS, 1915. Governor, Hiram W. Johnson, Prog.; Lieut.-Governor, A. J. Wallace; Secretary of State, F. C. Jordan; Treasurer, E. D. Roberts; Comptroller, A. B. Nye; Adjutant-General, Edwin A. Forbes; Attorney-General, U. S. Webb; Superintendent of Education, Edward Hyatt; Commissioner of Insurance, E. C. Cooper; Commissioner of Agriculture, R. L. Telfer—all Republicans, except governor.

SUPREME COURT: Chief Justice, W. H. Beatty; Associate Justices, H. A. Melvin, Lucien Shaw, F. M. Angellotti, M. C. Sloss, F. W. Henshaw, W. G. Lorigan; Clerk, B. G. Taylor—all Republicans.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	10	15	25
Republicans	7	33	40
Progressives	23	28	51
Socialist	..	3	3
Prohibitionists	..	1	1
Prog. majority	6	..	..

The representation in Congress will be found in the section *Congress*, article UNITED STATES.

CALIFORNIA, UNIVERSITY OF. A State institution for higher education, founded at Berkeley in 1860, the total enrollment in 1914 being 7526, with 434 in the faculty. The departments of the university include the college, colleges of law, medicine, and pharmacy, the university farm, and the San Francisco Institute of Art. The productive endowment fund amounts to about $5,000,000 and the income to about $2,000,000 annually. The library contains about 200,000 volumes and several hundred thousand manuscripts. The president is Benjamin I. Wheeler.

CALMETTE, GASTON. A French journalist and political writer, editor-in-chief and part proprietor of the Paris *Figaro*, killed by Madame Caillaux, wife of M. Joseph Caillaux, French minister of finance, on March 16, 1914. He was born in 1858 at Montpellier, and was educated at the Brest Lyceum, at Bordeaux, and elsewhere. He early entered journalism, and when about 26 years of age became connected with *Figaro*, and soon won wide notice by the vigorous and aggressive character of his writings. He was successively secretary, manager, and editor-in-chief of *Figaro*. His attacks on public men resulted in a number of duels. His political attitude was Moderate Republican, and under his auspices the *Figaro* became one of the leading organs of that party. Calmette was well known as a connoisseur, and owned a fine collection of engravings and caricatures of the First Empire. He received from Spain the decoration of the Grand Cross of the Order of Charles III. His death was the climax of a bitter controversy that had been going on since the beginning of 1914 between him and M. Joseph Caillaux. See FRANCE, *History*.

CAMBODIA. A French protectorate forming part of the colony of French Indo-China (q.v.).

CAMDEN, JOHNSON NEWLON. An American public official, elected in 1914 United States Senator from Kentucky. He was born in Parkersburg, W. Va., in 1865, and was educated at the Episcopal High School in Alexandria, Va., Phillips Academy at Andover, Mass., and the Virginia Military Institute at Lexington, Va. He studied law at the Columbia Law School in New York and was admitted to the bar. He did not, however, practice actively, but engaged in farming and the breeding and raising of fine cattle and thoroughbred horses. He was also interested in the opening and development of coal fields in eastern Kentucky. On June 16, 1914, he was appointed United States Senator to fill the vacancy caused by the death of Senator William O. Bradley (q.v.), his appointment under the law extending until the November election of 1914, at which he was the Democratic nominee for Senator for the unexpired term ending March 4, 1915. He was elected over two opponents, a Republican and Progressive. See KENTUCKY.

CAMPBELL, SIR FRANCIS. An English musician and teacher of music, died July 25, 1914. He was born in Winchester, Tenn., in 1832. At three years of age he met with an accident which resulted in the total loss of his sight. At the age of twelve he entered the Tennessee School for the Blind. When he was tested for singing it was found that he could not tell one tune from another, and he was told that he could not study music. He hired a companion to give him lessons on the piano and soon developed a remarkable musical talent. Four years later he became a teacher of music at his old school. In 1858 he settled in Boston and was soon appointed resident superintendent musical director of the Perkins' Institution for the Blind. He remained in this institution for eleven years, and then went to Germany to study in the Conservatories of Leipzig and Berlin. On his return home through London, he met the late Dr. T. R. Armitage, and the result of that meeting was the establishment of the Royal Normal College and Academy of Music for the Blind. He was principal of this college from 1862 to 1912. In 1909 he was created Knight. He retired from active duty in 1912. He was a noted mountain climber. He ascended Mont Blanc in 1881.

CANADA, DOMINION OF. A British self-governing dependency north of the United States. The capital is Ottawa, in the province of Ontario.

AREA AND POPULATION. The area of Canada is computed at 3,729,665 square miles, divided into nine provinces and Yukon Territory and the Northwest Territories. The following table shows the area of provinces and territories in land and water; the areas of Manitoba, Ontario, Quebec, and the Northwest Territories are adjusted to conform to the Boundary Extension Acts of 1912:

	Land	*Water* *	*Total* *
Alberta	252,925	2,360	255,285
British Columbia	353,416	2,439	355,855
Manitoba	231,926	19,906	251,832
New Brunswick	27,911	74	27,985
Nova Scotia	21,068	360	21,428
Ontario	365,880	41,382	407,262
Prince Edward Island	2,184	......	2,184
Quebec	690,865	15,969	706,834
Saskatchewan	243,382	8,318	251,700
Yukon Territory	206,427	649	207,076
Northwest Ters.	1,207,926	34,298	1,242,224
Canada	3,603,910	125,755	3,729,665

* The water area is exclusive of Hudson Bay, Ungava Bay, the Gulf of St. Lawrence, and all other tidal waters, excepting that portion of the St. Lawrence River which is between Pointe-des-Monts in Saguenay and the foot of Lake St. Peter.

By the Boundary Extension Acts (2 Geo. V, cc. 32, 40, and 45) passed by the Dominion Parliament in 1912 (proclaimed May 10 and in force from May 15, 1912), the provinces of Manitoba, Ontario, and Quebec were enlarged by the addition of areas that were previously part of the Northwest Territories. The boundaries of Manitoba were thus extended northwards to the 60th parallel of north latitude between the eastern boundary of Saskatchewan and the western shore of Hudson Bay; and from the point where the northern boundaries of Manitoba and Ontario formerly coincided the boundary of Manitoba was extended due north to a point defined and thence northeasterly to the point where the 89th meridian of west longitude intersects the southern shore of Hudson Bay. The northern boundaries of Ontario were extended to the southern shore of Hudson Bay, the new western boundary of Ontario coinciding with the new eastern boundary of Manitoba. To the province of Quebec was added the whole of the former district of Ungava, so that Quebec includes all of the peninsula of Labrador which is within Canada (the strip along the eastern shore of Labrador is a dependency of Newfoundland). The new district of Ontario is named Patricia. It is bounded on the west by Manitoba, on the south and southeast by the English and Albany Rivers, and on the east and north by James and Hudson Bays. Pursuant to an order in council dated Feb. 20, 1912, and subject to subsequent enactment by the Dominion parliament of the necessary legislation, Ontario would also possess a strip of territory (then within Manitoba) five miles wide lying between the district of Patricia and the Nelson River and to be located within 50 miles of the shore of Hudson Bay, as well as an area half a mile wide and five miles long to be located along the south shore of the Nelson River. The latter area would be contiguous to the five-mile strip, and together these areas would afford 10 miles of water front for harbor facilities and railway terminals. The land was to be selected and designated by the Ontario government within five years from the date of the order in council.

The following table shows the area, the population as returned by the census of April 1, 1901, the population as returned by the census of June 1, 1911, and the population increase per cent.:

	Sq. mi.	*Pop. '01*	*Pop. '11*	*Inc.*
Alberta	255,285	73,022	374,663	413.08
Brit. Columbia	355,855	178,657	392,480	119.68
Manitoba	73,732	255,211	455,614	78.52
New Brunswick	27,985	331,120	351,889	6.27
Nova Scotia	21,428	459,574	492,338	7.13
Ontario	260,862	2,182,947	2,523,274	15.58
Pr. Edward Isl.	2,184	103,259	93,728	*9.23
Quebec	351,873	1,648,898	2,003,232	21.49
Saskatchewan	251,700	91,279	492,432	439.48
Yukon Ter.	207,076	27,219	8,512	*68.73
Northwest Ters.	1,921,685	20,129	18,481	*8.18
Canada	3,729,665	5,371,315	7,206,643	34.17

* Decrease.

The extent of the changes effected by the Boundary Extension Acts of 1912 is shown below (increase of area, present area, and population adjusted to the 1911 census):

	Inc. sq. m.	*Sq. m.*	*Pop. '11*
Manitoba	178,100	251,832	461,630
Ontario	146,400	407,262	2,527,292
Quebec	354,961	706,834	2,005,779
Northwest Territories	*679,461	1,242,224	5,900

* Decrease, equal to the increase of the three provinces.

The average density of the population, according to the 1911 census, was 1.93 per square mile, calculated upon the total of 3,729,665 square miles. This figure may be compared with the density per square mile of other "new" countries, as, for instance, the United States 30.69, New Zealand 9.63, the Commonwealth of Australia 1.53, and Newfoundland 1.47. Prince Edward Island had a density of 42.91 per square mile; Nova Scotia, 22.98; New Brunswick, 12.61; Ontario, 9.67; Manitoba, 6.18; Quebec, 5.69 (figures for the last three provinces are upon the basis of area as before the changes of 1912); Saskatchewan, Alberta, and British Columbia, each less than 2 per square mile.

In the older parts of the Dominion, there is a marked trend of population from country to town. The following table shows rural and urban population in 1911, with increase and decrease as compared with 1901:

	Pop. 1911		*Incr. or decr.*	
	Rural	*Urban*	*Rural*	*Urban*
Alberta	232,726	141,937	180,327	121,814
Br. Columbia	188,796	203,684	100,318	113,505

	Pop. 1911		*Incr. or decr.*	
	Rural	*Urban*	*Rural*	*Urban*
Manitoba	255,249	200,365	70,511	129,892
New Brunsw'k	252,342	99,547	—1,493	22,262
Nova Scotia .	306,210	186,128	—28,981	56,745
Pr. Edw. Isl.	78,758	14,970	—9,546	15
Quebec	1,032,618	970,614	39,951	314,383
Ontario	1,194,785	1,328,489	—52,184	392,511
Saskatchewan	361,067	131,365	287,388	113,815
Yukon Ter. ..	4,647	3,865	—13,430	—5,277
Northw't Ters.	18,481	....	—1,648	......
Canada ...	3,925,679	3,280,965	576,163	1,259,165

It should be pointed out that, in the foregoing table, the urban population includes the inhabitants of places who, in some classifications, would have been placed in the rural list. The urban total includes, to the number of 90,284, inhabitants of places with a population less than 500; 180,784 dwelling in towns with a population between 500 and 1000; 429,553 in towns between 1000 and 3000; and 226,212 in towns between 3000 and 5000. At the 1911 census, Montreal had 14.34 per cent of the urban, and 6.53 per cent of the total population of the country; Toronto, 11.48 and 5.22; Winnipeg and Vancouver, 7.21 and 3.28; Ottawa, Hamilton, and Quebec, 7.55 and 3.44; 6 places with between 25,000 and 50,000 inhabitants, 7.35 and 3.34; 13 between 15,000 and 25,000, 7.24 and 3.30; 18 between 10,000 and 15,000, 6.74 and 3.07; 46 between 5000 and 10,000, 9.85 and 4.48; 60 between 3000 and 5000, 6.89 and 3.14; 251 between 1000 and 3000, 13.09 and 5.97; 247 between 500 and 1000, 5.51 and 2.51; under 500, 2.75 and 1.25. Of the total population, 45.53 per cent was urban. The estimated population of the Dominion, March 31, 1914, was 8,075,000.

Education. Education is under the control of the provincial governments, the cost being met by local taxation, aided by grants from the several provincial governments. Primary instruction is free and, except in Quebec and Manitoba, compulsory. Of the total population (6,319,160 persons of five years of age and over, census of June 1, 1911), 5,622,844 (88.98 per cent) could read and write, 32,863 (0.52 per cent) could read only, and 663,453 (10.50 per cent) could neither read nor write. In 1901 the percentage of illiterate was 14.38. In the table below will be found the total public, high, and superior schools by provinces, the number of teachers and pupils, and the total provincial expenditure, together with the percentage of illiteracy according to the census of June 1, 1911.

	No.	*Teachers*	*Pupils*	*Expend.*	*Per cent*
Alberta [3]	1,601	3,054	71,044	$5,387,568	12.72
Br. Columbia [3]	574	1,377	49,968	3,882,488	11.61
Manitoba [5] ...	2,227	2,774	76,247	4,000,671	13.81
New Bruns'k [2]	1,907	2,031	69,586	*290,741	14.05
Nova Scotia [3].	2,680	2,861	106,028	1,891,100	10.84
Ontario [1]	6,715	12,586	522,413	12,104,422	6.51
Prince Edw. I. [4]	478	591	17,397	181,177	7.61
Quebec [4]	6,896	13,238	397,060	6,224,146	12.66
Saskatch'n [1] .	2,124	3,551	72,250	3,989,036	13.70

* Government and county fund expenditure only.

[1] Dec., 1911. [2] June, 1912. [3] July, 1912. [4] June, 1911. [5] December, 1910.

The percentage of illiteracy in Yukon was 13.58, and in the Northwest Territories 69.25.

British Columbia. The schools are free and unsectarian; the central control is vested in a council of public instruction. Schools are established wherever there are 10 children of school age. There are 30 high schools, employing 96 teachers.

Manitoba. A system of national nonsectarian schools was established throughout the province by an act of 1890, which provides that all public schools shall be free schools, and that every person in rural municipalities between the ages of 5 and 21 years, and in cities, towns, and villages between the ages of 6 and 21 years "shall have the right to attend some school." Normal schools are provided, and there is one university, with examining and degree-conferring powers only. The affiliated colleges are St. John's (Episcopal), St. Boniface (Roman Catholic), Manitoba (Presbyterian), Wesley (Wesleyan), and the Manitoba Medical.

New Brunswick. Education is free between the ages of 6 and 20 years. The central control is vested in a board of education, the local management being in the hands of boards of trustees. There are universities at Fredericton, Sackville, and Memramcook.

Nova Scotia. Education is compulsory in towns between the ages of 7 and 12 years. Local technical schools have been established in all the large industrial centres, with a central institution (the Nova Scotia Technical College) at Halifax.

Ontario. Primary instruction is free and compulsory; all schools are required to employ only certificated teachers. There are agricultural, commercial, and classical institutions. There is a provincial nondenominational university at Toronto, with affiliated colleges; besides two nondenominational and two denominational colleges with university powers. The central control is vested in a minister of education, who is a member of the provincial cabinet.

Prince Edward Island. Primary instruction is free, nonsectarian, and compulsory between the ages of 8 and 13 years. There is one higher college amalgamated with the normal school, besides a Roman Catholic college not under government control. There are two private kindergartens, and consolidated schools at Hillsboro and Tryon.

Quebec. The central control is vested in a superintendent of public instruction, assisted by a council of 44 members, who are divided into committees for the separate management of Roman Catholic and Protestant schools. The schools are maintained partly by local taxation and fees, and partly by grants from the provincial government. There are normal, agricultural, commercial, and classical schools; and three universities—McGill College (Protestant) at Montreal, Bishop's College (Protestant) at Lennoxville, and Laval University (Roman Catholic), at Quebec.

Agriculture. Agriculture is the most important industry, and large quantities of cereals are raised for export. The total area estimated as under field crops in the Dominion in 1913 was 35,375,000 acres, as compared with 35,575,000 acres in 1912. The total value of the output from these lands, computed at average local market prices, was $552,771,500, as compared with $556,344,100 in 1912. Wheat was grown upon 11,015,000 acres, of which 970,000 acres were devoted to fall wheat with an output of 22,592,000 bushels valued at $18,185,000; as compared with 971,000 acres in 1912 producing 20,387,000 bushels valued at $17,157,000. Spring wheat was planted on 10,045,000 acres, yielding 209,125,000 bushels valued at $138,277,000; as compared with 10,025,700 acres in 1912, yielding 203,772,000 bushels valued at $121,933,000. Both the spring wheat and oat crops of 1913 are the highest on record in Canada, spring wheat as regards area, yield, and value; oats as regards area and yield. In the table below are given the area in acres devoted to main crops in 1913, the yield in bushels, and the value:

Crops	*Acres*	*Bushels*	*Value*
Wheat	11,015,000	231,717,000	$156,462,000
Oats	10,434,000	404,669,000	128,894,000
Barley	1,613,000	48,319,000	20,114,000
Rye	119,300	2,300,000	1,524,000
Peas	218,980	3,951,800	4,382,000
Beans	46,600	800,900	1,505,000
Buckwheat ...	380,700	8,372,000	5,820,000
Mixed grains..	473,800	15,792,000	8,685,000
Flaxseed	1,552,000	17,539,000	17,084,000
Corn *	278,140	16,772,600	10,784,300
Potatoes	473,500	78,544,000	38,418,000
Turnips, etc...	186,400	66,788,000	18,643,000
		Tons	
Hay and clover	8,169,000	10,859,000	124,696,000
Fodder corn ..	303,650	2,616,300	12,506,000
Sugar beets ..	17,000	148,000	906,000
Alfalfa	93,560	237,770	2,819,200

* For husking.

In the table below are given area and yield of wheat, oats, and barley in the three northwest provinces for 1912 and 1913. In 1905 the total area under wheat in these provinces was 3,941,369 acres, yielding 82,461,627 bushels; oats, 1,697,170 acres and 68,810,855 bushels; barley, 370,850 acres and 10,971,755 bushels.

		Wheat	*Oats*	*Barley*
Manitoba:				
Acres ...	1912	2,839,000	1,348,000	481,000
	1913	2,804,000	1,398,000	496,000
Bushels .	1912	63,017,000	57,154,000	15,826,000
	1913	53,331,000	56,759,000	14,305,000
Saskatchewan:				
Acres ...	1912	5,582,000	2,556,000	292,000
	1913	5,720,000	2,755,000	382,000
Bushels .	1912	106,960,000	117,587,000	9,595,000
	1913	121,559,000	114,112,000	10,421,000
Alberta:				
Acres ...	1912	1,590,000	1,461,000	187,000
	1913	1,612,000	1,639,000	197,000
Bushels .	1912	34,303,000	67,680,000	6,179,000
	1913	34,372,000	71,542,000	6,334,000
Total Northwest Provs.:				
Acres ...	1912	10,011,000	5,365,000	960,000
	1913	10,136,000	5,792,000	1,125,000
Bushels .	1912	204,280,000	242,221,000	31,600,000
	1913	209,262,000	242,413,000	31,160,000

The total live stock on farms in 1913 was as follows: 2,866,008 horses (2,132,489 in 1909), 2,740,434 milch cows (2,849,305), 3,915,687 other cattle (4,384,779), 2,128,531 sheep (2,705,390), 3,448,326 swine (2,912,509).

Dairying. Large quantities of dairy produce are exported. The total butter production in 1910 was 202,796,699 pounds (valued at $45,926,553), as compared with 141,409,815 pounds in 1900. The increase in quantity is 43.41 per cent. The total cheese production in 1910 was 201,267,466 pounds, valued at $15,798,881. The total quantity of milk produced was returned by farmers as 9,871,178,103 pounds. There were, in 1910, 3625 butter and cheese factories; output of cheese, 199,904,205, valued at $21,587,124; butter, 64,698,165 pounds, $15,645,845. Home-made butter, 138,098,534 pounds, valued at $30,280,608; cheese, 1,363,261 pounds, $153,036. The condensed milk factories had an output valued in 1910 at $1,814,871.

Forests. The total area covered by timber is estimated by the forestry branch of the Department of the Interior at between five and six hundred million acres, of which between two and three hundred million acres are covered by timber of commercial size. The total forest reserve has grown from 7,413,760 acres in 1901 to 152,833,955 acres in 1914, distributed as follows: 107,997,513 acres in Quebec, 14,430,720 in Ontario, 2,474,240 in British Columbia under provincial control; and 27,931,482 acres of land under federal jurisdiction in Manitoba (2,606,400 acres), Saskatchewan (6,195,706), Alberta (16,711,776), and British Columbia (2,417,600). The present administration of the forest reserve provides little beyond a service, by appointment of forest rangers, for the prevention and control of forest fires, the enforcement of fire-prevention regulations, and the provision of fire-fighting appliances; but measures for more scientific and remunerative management are in process of development.

Fish and Game. The estimated total capital invested in the fisheries amounted in 1912–13 to $24,388,459 ($20,932,904 in 1911–12), of which $20,442,714 was invested in connection with the sea fisheries, and $3,945,745 with the inland fisheries. Value of vessels and boats in 1912–13 engaged in fishing, $7,744,038; value of fishing gear, canneries, fish-houses, and other fixtures, $16,644,421. Persons engaged in the fishing industry, 88,408, of whom 23,237 were employed on shore in canneries, etc. Total value in 1912–13 of all kinds of fish, fish products, and marine animals taken in both sea and inland fisheries, $33,389,464, a decrease of $1,278,408 as compared with 1911–12 ($34,667,872). Of the total amount in 1912–13, the products of the sea fisheries were valued at $29,315,772, of the inland fisheries at $4,073,692. The value of the total fisheries products in 1912–13 by provinces was as follows: British Columbia, $14,455,488 ($13,677,125 in 1911–12); Nova Scotia, $7,384,055 ($9,367,550 in 1911–12); New Brunswick, $4,264,054 ($4,886,157); Ontario, $2,842,878 ($2,205,436); Quebec, $1,988,241 ($1,868,136); Prince Edward Island, $1,379,905 ($1,196,396); Manitoba, $800,149 ($1,113,486); Saskatchewan, $111,839 ($139,436); Alberta, $51,616 ($102,325); Yukon, $111,239 ($111,825).

The value of the skins and furs of wild animals killed during the year 1910 was $1,927,550 ($899,645 in 1901); of which $445,320 was for assorted furs, $256,213 for muskrats, $221,583 for martens, and $221,500 for minks.

Homesteads. Ordinary homestead entries for lands of the Dominion government during the calendar year 1913 totaled 31,499 (35,538 in 1912). Of this number 2998 entries were made in Manitoba, 14,524 in Saskatchewan, 12,122 in Alberta, and 1855 in British Columbia. Preemptions under the Dominion Lands Act in 1913 numbered 6483—4711 in Saskatchewan and 1772 in Alberta. Purchased homesteads, 783—534 in Saskatchewan and 252 in Alberta.

Mining. The total value of the mineral products in the calendar year 1913 was $144,031,047 (preliminary report of the Department of Mines), as compared with the final revised total of $135,048,296 for 1912. This is an increase of 6.65 per cent. Labor strikes in Vancouver Island affected the coal output. The total output of metals was valued at $66,127,821, or 45.9 per cent of the total value, and of nonmetallic products at $77,903,226, or 54.1 per cent. In the table below is shown the value of the mineral output by provinces for two years, with percentage of totals:

	1912		*1913*	
	$	*P.c.*	*$*	*P.c.*
Ontario ..	51,985,876	38.50	58,697,602	40.75
Br.Columbia	30,076,685	22.27	28,529,081	19.81
Nova Scotia	18,922,236	14.01	19,305,545	13.40
Alberta ...	12,073,589	8.94	13,844,622	9.61
Quebec ...	11,656,998	8.62	13,303,649	9.24
Yukon ...	5,933,242	4.39	6,190,224	4.30
Manitoba .	2,468,074	1.83	2,211,159	1.54
New Bruns.	771,004	0.57	1,049,932	0.73
Saskatch. .	1,165,642	0.86	899,238	0.62
Total ..	135,048,296	100.00	144,031,047	100.00

The quantities and values of the separate articles produced in 1912 and 1913 are shown in the table below:

	1912		*1913*	
	*	*$*	*	*$*
Copper *a*	77,832,127	12,718,548	76,975,832	11,753,440
Gold *b*	611,885	12,648,794	784,525	16,216,131
Pig iron *c*	86,855	450,886	78,508	996,409
Lead *a*	35,763,476	1,597,554	37,662,703	1,754,705
Nickel *a*	44,841,542	13,452,463	49,676,772	14,903,082
Silver *b*	31,955,560	19,440,165	31,750,618	18,984,012
Total metals	....	61,172,758	....	66,127,821
Asbestos *c*	136,301	3,137,279	161,086	3,849,925
Coal *c*	14,512,829	36,019,044	15,115,089	36,250,311
Gypsum *c*	578,458	1,324,620	639,698	1,477,589
Natural gas *d*	15,286,803	2,362,700	20,345,763	3,338,814
Petroleum *e*	243,336	345,050	228,080	406,439
Salt *c*	95,053	459,582	100,791	491,280
Cement *e*	7,132,732	9,106,556	8,658,922	11,227,284
Clay products	....	10,575,869	....	9,678,067
Lime *f*	8,475,839	1,844,849	7,671,381	1,605,812
Stone	....	4,726,171	....	5,199,204
Miscellaneous	....	3,973,823	....	4,384,001
Total non-metals	....	73,875,548	....	77,903,226
Grand Total	....	135,048,296	....	144,031,047

* Quantities as follows: *a* = lbs.; *b* = oz.; *c* = tons; *d* = m. feet; *e* = barrels; *f* = bushels.

The pig iron quoted above is derived from Canadian ore. In addition, pig iron was produced from imported ores as follows: 978,232 tons valued at $14,100,113 in 1912, and 1,055,459 tons valued at $15,543,583 in 1913.

MANUFACTURES. A comparison of the returns of the manufacturing industries for 1905 and 1910 showed increase of capital in 5 years of 47.36 per cent, of employees on salaries 20.77, of salaries 42.49, of employees on wages 32.32, of wages 46.77, and of products 62.31. The returns for the 5 years from 1900 to 1905 showed increase of capital of 89.43, of employees on salaries 18.91 per cent, of salaries 29.77, of employees on wages 15.41, of wages 50.02, and of products 49.32. The number of establishments in 1910 was 19,218; capital invested, $1,247,583,609; employees on salaries, 44,077; salaries, $43,779,715; employees on wages, 471,126; wages, $197,228,701; value of raw and partly manufactured materials, $601,509,018; value of output, $1,165,975,639. In the table below are shown number of establishments, amount of invested capital, and value of total production by provinces for the year 1910:

	No.	*Capital*	*Output*
P. E. Island	442	2,013,365	3,136,470
Nova Scotia	1,480	79,596,341	52,706,184
New Brunswick ..	1,158	36,125,012	35,422,302
Quebec	6,584	326,946,925	350,901,656
Ontario	8,001	595,394,608	570,810,225
Manitoba	439	47,941,540	53,673,609
Saskatchewan	178	7,019,951	6,332,132
Alberta	290	29,518,346	18,788,825
Br. Columbia ...	651	123,027,521	65,204,236
Canada	19,218	1,247,583,609	1,165,975,639

Engaged in the manufacture of food products were 6885 establishments, with $133,044,523 capital invested, 52,730 employees on wages, $175,453,469 cost of raw materials, $245,669,321 value of output; timber and lumber industries, 4999 establishments, $259,889,715 capital, 110,059 employees, $94,052,429 cost of materials, $184,630,376 value of output; textiles, 1444 establishments, $108,787,407 capital, 72,672 employees, $72,128,436 cost of materials, $135,902,441 value of output; iron and steel works, 824 establishments, $123,561,319 capital, 48,558 employees, $52,452,103 cost of materials, $113,640,610 value of output; metals and metal products other than steel, 341 establishments, $67,133,540 capital, 17,502 employees, $33,609,447 cost of materials, $73,241,796 value of output; vehicles for land transportation, 465 establishments, $49,397,096 capital, 35,778 employees, $34,520,154 cost of materials, and $69,712,114 value of output; leather and its finished products, 399 establishments, $48,788,802 capital, 22,742 employees, $34,394,189 cost of materials, $62,850,412 value of products.

COMMERCE. In the table below are shown total imports of merchandise dutiable (D) and free (F), coin and bullion, and total general; imports entered for consumption dutiable and free, coin and bullion, and total special; also exports of Canadian and foreign produce, coin and bullion, and total exports, for three successive years:

Imports	*1912*	*1913*	*1914*
Mdse. D	$343,870,082	$456,636,187	$425,324,576
Mdse. F	189,916,581	230,518,226	210,136,916
C. & B.	26,033,881	5,427,979	15,285,305
Total gen'l.	$559,820,544	$692,082,392	$650,746,797

Imports	*1912*	*1913*	*1914*
Mdse. D.....	$335,304,060	$441,606,885	$410,258,744
Mdse. F.....	186,144,249	228,482,181	208,198,400
C. & B.	26,033,881	5,427,979	15,285,305
Tl. special.	$547,482,190	$675,517,045	$633,692,449

Exports	*1912*	*1913*	*1914*
Mdse. C. prod.	$290,223,857	$355,754,600	$431,588,439
Mdse. F. prod.	17,492,294	21,313,755	23,848,785
C. & B.	7,601,099	16,163,702	23,560,704
Total exps.	$315,317,250	$393,232,057	$478,997,028

Total duties collected on imports for home consumption, 1911, $73,312,368; 1912, $87,576,037; 1913, $115,063,688; 1914, $107,180,578. In the table below will be found exports of Canadian produce by great classes for three successive years:

	1912	*1913*	*1914*
Mining prods....	41,324,516	57,442,546	59,039,054
Fisheries prods..	16,704,678	16,336,721	20,623,560
Forest prods.....	40,892,674	43,255,060	42,792,137
Animal prods....	48,210,654	44,784,593	53,349,119
Agricult'l prods..	107,143,375	150,145,661	198,220,029
Manfd. prods. ..	35,836,284	43,692,708	57,443,452
Miscellaneous ...	111,676	97,311	121,088
Total exps. ...	290,223,857	355,754,600	431,588,439

The principal imports for consumption in 1914 were as follows, values in thousands of dollars: Live animals, 2515; books, maps, pamphlets, periodicals, etc., 6754; breadstuffs, 9426; carriages, automobiles, bicycles, etc., 20,098; cement, 352; coal, coke, etc., 49,036; cotton and its manufactures, 37,601; drugs, dyes, chemicals, and medicines, 14,638; earthenware and chinaware, 3,131,305; electrical apparatus, 8924; fancy goods, 4879; fish, 2173; flax, hemp, jute and their manufactures, 8963; fruits, 17,233; furs and their manufactures, 3754; glass and its manufactures, 5075; gutta-percha, India rubber and their manufactures, 8994; hats, caps, bonnets, etc., 5452; leather and its manufactures, 8454; total metals and minerals and their manufactures, 154,283; brass and its manufactures, 4415; copper and its manufactures, 6581; iron and steel and their manufactures, 119,221; tin and its manufactures, 6358; oils, 17,095; paints and colors, 2161; paper and its manufactures, 8043; provisions, 10,813; seeds, 1671; settlers' effects, 14,348; silk and its manufactures, 9689; sugar, molasses, etc., 17,949; tea, 6650; tobacco, 6899; wood and its manufactures, 24,676; wool and its manufactures, 31,438.

The leading exports of Canadian produce are cereals and cereal products. In the table below are shown for three years quantities and values of wheat, wheat flour, oats, and the total of all grains, including other than wheat and oats:

	1912	*1913*	*1914*
Wheat, bu.	64,466,286	93,166,009	120,426,579
Wheat, $	62,590,563	88,608,730	117,719,217
Oats, bu.	8,880,675	10,478,554	34,996,664
Oats, $	3,819,642	5,067,950	13,379,849
All grains, bu. ..	76,000,661	110,571,307	168,929,380
All grains, $	68,427,932	97,941,344	138,129,261
Wheat, fl. bbls...	3,738,836	4,478,048	4,882,188
Wheat, fl. $	16,034,064	19,970,689	20,581,079

Besides cereals, important domestic exports for the years 1913 and 1914, in thousands of dollars, were as follows: Planks and boards, 20,839 and 19,514; deals, 1387 and 1409; wood blocks for pulp, 6806 and 7389; square timber, 1363 and 536; shingles, 1409 and 1776; silver, 20,202 and 20,972; gold, 11,227 and 13,327; copper, 9912 and 9490; coal, 5555 and 3704; asbestos, 2487 and 2892; dry salted codfish, 4302 and 4565; canned salmon, 3484 and 6631; canned lobsters, 3049 and 2984; hides and skins other than fur, 7276 and 9263; furs, 5166 and 5569; bacon and hams, 5674 and 4033; cheese, 20,697 and 18,869 (the greatest export of cheese was in 1903, $24,712,943); hay, 3950 and 1786; agricultural implements, 6123 and 7220; wood pulp, 5510 and 6365; fresh apples, 4048 and 3465.

In the table below is shown the principal countries of origin and destination with the total imports and exports in thousands of dollars:

	Imports		*Exports*	
	1913	*1914*	*1913*	*1914*
United States ..	441,143	410,786	167,110	200,459
United Kingdom.	138,749	132,071	177,982	222,328
France	15,330	14,277	2,565	3,811
Germany	14,215	14,586	3,402	4,434
Br. W. Indies ..	10,578	11,504	6,237	6,998
Belgium	4,020	4,490	4,309	4,820
Newfoundland ..	2,057	1,841	4,728	4,770
South America ..	10,529	9,020	4,352	4,026

Shipping. Shipping entered and cleared, exclusive of the coasting trade, in fiscal years:

	Entered		*Cleared*	
	Vessels	*Tons*	*Vessels*	*Tons*
		Sea-going		
1904	14,985	8,148,856	15,059	7,682,849
1909	15,140	10,264,187	15,042	9,501,689
1913	18,087	13,575,198	17,579	12,655,905
1914	18,320	14,982,893	17,695	14,586,093
		On Inland Waters		
1904	21,110	8,122,889	20,516	7,252,661
1909	21,774	10,626,876	21,768	10,808,851
1913	30,814	16,147,103	30,754	15,471,582
1914	28,316	16,206,290	29,156	16,144,707

Communications. The total railway mileage in operation June 30, 1913, was 29,304. In 1880 there were in operation 7194 miles; in 1890, 13,151; in 1900, 17,657; in 1910, 24,731; in 1912, 26,727. For the fiscal years 1912 and 1913, respectively, the gross earnings were $219,403,753 and $256,702,703 (from freight, $149,961,140 and $177,089,373; from passenger traffic, $65,048,187 and $74,431,994); operating expenses, $150,726,540 and $182,011,690; net earnings, $68,677,213 and $74,691,013; freight carried, 89,444,331 and 106,992,710 tons; passengers carried, 41,124,181 and 46,230,765.

During the fiscal year 1913, there were added to the capital liability of railways $100,483,633, including stocks, $47,882,910, and funded debt, $52,600,723. These additions would have brought the capital liability to $1,689,421,159; but during the year 1912–13 a reconstruction of the capital statement of railways was completed with the result that from stocks were eliminated $63,025,745 and from funded debt $94,564,722, while a sum of $163,257,224 was placed in a new class as consolidated debenture stock. Thus the revised total of the capital liability June 30, 1913, stood at $1,531,830,692.

The increase in Canadian railway mileage for the fiscal year 1913 was 2577, as compared with 1327 in 1912, 699 in 1911, and 627 in 1910. Part of the increment for 1913 is accounted for by the bringing into the report of 1396 miles of the Grand Trunk Pacific Railway, which hitherto, although in operation, were officially regarded as under construction.

On June 30, 1913, the Canadian Pacific Railway had a mileage leased and owned of 11,508, as well as 970 miles of double track; the Grand Trunk Railway, 5049 miles, with 707 miles of double track. On the eastern division of the National Transcontinental Railway, under construction by the Dominion government from Moncton, N. B., to Winnipeg, Man., a distance of 1805 miles, 90 miles of main-line track were laid during the season ended Nov. 30, 1913, and the total mileage of main-line track laid to this date was 1822, including double track. The western section of the National Transcontinental, from Winnipeg to Prince Rupert, B. C., is under construction by the Grand Trunk Pacific Railway Company. The track was connected on the last section between East and West at mile 1371 west of Winnipeg on April 7, 1914, so that construction trains were enabled to pass over the entire line from Winnipeg to Prince Rupert. In the summer of 1914, regular train service was in operation between Winnipeg and Prince George, B. C., a distance of 1279 miles, and also between Prince Rupert and Priestly, B. C., 337 miles.

In September the Grand Trunk Pacific announced through passenger and freight service between Fort William and Prince Rupert, placing the latter city in direct communication with eastern Canada and the United States, and affording access to a large number of towns in central British Columbia, which hitherto had been reached only by stage or river steamers. The Grand Trunk Pacific had 2195 miles of main line in operation. During 1913, 1227 miles of new road were added to the Canadian Northern Railway. Progress on the Canadian Northern Pacific Railroad in British Columbia continued actively during the year, so that at its close it was anticipated that the last spike would be driven some time in 1915. Nearly all of the important bridges had been completed on October 1, but there remained a few canyons still to be crossed and some gradings in the gap. The tracklaying gangs working east from Vancouver had advanced from a point 123 miles north of the Kamploops on October 1, while the westbound gangs had carried the rail-head 48 miles west of Yellowhead Pass, so that an 86-mile gap remained to be completed on October 1. The main line within the borders of British Columbia had a total of about 50 bridges and trestles, ten of which were structures of considerable importance, while nine were viaducts or shorter span steel bridges. The mileage operated by the Intercolonial Railways is 1489. On the new line from Le Pas, Man., to Hudson Bay, under construction by the Dominion government, 82 miles of track were laid by the end of 1913, and 130 miles were graded for tracklaying. During the year 1914 there were 1978 miles of first track and 152 miles of second track completed in the Dominion of Canada, as compared with 3013 miles of new first track and 353 miles of second track in 1913. Of this amount of new construction in 1914 the Canadian Pacific built 620 miles of new line, and the Canadian Northern and its subsidiaries built 515 miles, while the Grand Trunk Pacific built 249 miles. Nearly all of this new mileage was in Western Canada, and the construction of second track was confined entirely to the Canadian Pacific. At the end of 1914, 465 miles of new first track was under construction in Canada; also 2127 miles additional was surveyed, and 80 miles projected.

On October 25 it was announced by the Attorney-General of British Columbia that through the efforts of the Federal government $6,000,000 would be loaned to the Pacific Great Eastern Railway on the security of its bonds. This amount was to aid in tiding over the financial crisis, and to provide for the continuation of construction work, which at that time was being participated in by some 6000 men on the company's payroll in British Columbia. With this loan the construction was not only continued but was carried on so strenuously that records for rapid progress were made. The completed line had been ballasted from tidewater at Squamish to Pemberton Meadows on the Lillooet River, a distance of about 75 miles, and it was proposed at once to establish a combination freight and passenger service to accommodate settlers. See below paragraphs on *History*.

The following table shows the mileage of Canadian railways by provinces, at the end of fiscal years:

	1903	*1911*	*1912*	*1913*
Ontario	7,928	8,322	8,546	9,000
Quebec	3,574	3,882	3,882	3,986
Manitoba	3,111	3,466	3,520	3,993
Saskatchewan	2,081	3,121	3,754	4,651
Alberta	1,323	1,494	1,897	2,212
Br. Columbia	1,738	1,842	1,855	1,951
New Brunswick	1,509	1,548	1,545	1,545
Nova Scotia	1,344	1,354	1,357	1,360
Prince Edward Island	267	269	269	279
Yukon	91	102	102	102
In United States	....	....	....	225
Total	22,966	25,400	26,727	29,304

The telegraph systems include lines owned and operated by the Dominion government and lines owned and operated by railway and telegraph chartered companies. The government service, March 31, 1913, had 9729 miles of lines (including 277 knots, reckoned as miles, of submarine cables); offices, 682. The ten companies reporting in 1913 had 36,604 miles of lines, with 176,124 miles of wire, and 3331 offices. There are many coastal radiotelegraphic stations. In 1913, there were 463,671 telephones in use, with 1,092,587 miles of wire. Post offices in 1900, 9627; in 1912, 13,859; in 1913, 14,178.

Finance. The system of public finance includes a consolidated fund and miscellaneous accounts. To the consolidated fund are paid in the revenues and out of it are paid the expenditures properly relating to the fiscal year. The miscellaneous accounts comprehend loans, debt redemption, railway administration, capital expenditure on public works, etc. For fiscal years ended March 31 (except 1903, which ended June 30), the expenditure and the revenue of the Dominion government are shown below, in dollars. The several items are indicated as follows: *a* expenditure chargeable to consolidated fund; *b* expenditure chargeable to capital; *c* railway subsidies; *d* other charges; *e* total disbursements; *f* revenue on account of consolidated fund; *g* other revenues; *h* total revenue; *i* difference between receipts and disbursements; *j* sinking funds; *k* net difference between receipts and disbursements, that is, net excess of receipts (except in 1909, when there was a net excess of expenditure).

	1908	*1909*	*1912*	*1913*
a	$51,691,903	$84,064,282	$98,161,441	$112,059,587
b	7,052,725	42,593,167	30,939,576	27,206,046
c	1,463,222	1,785,837	859,400	4,935,507
d	1,538,722	4,998,238	7,181,665	255,738
e	61,746,572	133,441,524	137,142,082	144,456,878
f	66,037,069	85,093,404	136,108,217	168,689,903
g	3,311,015	456,176	....	524
h	69,348,084	85,549,580	136,108,217	168,690,427
i	7,601,512	47,901,944	1,033,865	24,233,549
j	2,620,588	1,922,525	1,156,456	1,384,285
k	*10,222,100	†45,979,419	*122,591	*25,617,834

* Net excess of receipts. † Net excess of expenditure.

Ordinary revenue and expenditure, that is, receipts and disbursements on account of consolidated fund, have been as follows for fiscal years:

	1912	*1913*	*1914*
		Receipts	
Customs	$ 85,051,872	$111,764,699	$104,691,238
Excise	19,261,662	21,447,445	21,452,087
Post office ..	10,492,394	12,051,729	12,954,530
Railways ...	11,034,166	12,442,208	13,394,317
Miscellaneous.	10,268,123	....	....
Total	$136,108,217	$168,689,903	$163,174,395
		Disbursements	
Debt charges.	$12,706,850	$ 13,089,405	$ 13,358,519
Sinking funds	1,156,456	1,384,285	1,871,429
Provincial subsidies	10,281,045	13,211,800	11,280,469
Civil govt....	4,774,678	5,109,459	5,607,795
Public works.	10,344,487	13,468,505	19,007,518
Defense	7,580,600	9,114,588	11,151,399
Revenue collection	28,256,780	33,006,201	....
Other	23,060,541	23,675,259	....
Total	$98,161,441	$112,059,587	$127,384,478
Surplus .	37,946,777	56,630,366	35,789,922

The following figures relate to March 31, 1913 and 1914: Total debt, $483,232,555 and $544,391,369; total assets, $168,930,930 and $208,394,519; net debt, $314,301,626 and $335,996,850. The net debt increased from $152,451,589 in 1880 to $237,533,212 in 1890, $265,493,807 in 1900, $336,268,546 in 1910. Interest paid on debt in the fiscal year 1914, $12,893,505; interest received from investment, $1,964,541.

Navy. The Naval Service Department was established in 1910. A programme of construction was introduced, but subsequently abandoned. Another programme was introduced in December, 1912, in a bill appropriating $35,000,000, but in 1913 the bill failed of enactment. The only ships of fighting value are the first-class cruiser *Niobe* (11,000 tons) and the second-class cruiser *Rainbow* (3000 tons). There are 24 small vessels, 8 of which are for fishing protection duty, 3 are used on the Great Lakes, 2 are ice-breakers, 4 are detailed for lighthouse duty, and the remainder are used in the revenue and surveying services. See below, under *History*.

Army. While every citizen of Canada between the ages of 18 and 60 is liable for service in the militia under the Canadian Militia Act of 1904, yet compulsory service up to 1914 was unnecessary, and cadet and volunteer training sufficed. There was a small permanent force, about 3500, largely for purposes of instruction, and a volunteer force of about 75,000, with annual periods of training. On the outbreak of the war a large number of volunteer organizations were mobilized in various camps of instruction, new recruits were enlisted, and early in the autumn the regiments, convoyed by battleships, were transported to England. Naturally the greatest secrecy attended these operations and few details were forthcoming during the year. See below, under *History*.

Government. The executive authority is exercised in the name of the King of Great Britain and Ireland by an appointed governor-general acting through a privy council, or responsible ministry. The legislative power is vested in a parliament of two houses, the Senate and the House of Commons. The Senate consists of 87 members, nominated for life by the governor-general. Members of the House of Commons—221 in number—are elected by popular vote and hold office for 5 years unless the Parliament is sooner dissolved. The governor-general in 1914 was Prince Arthur, Duke of Connaught and Strathearn (brother of Edward VII), who assumed office Oct. 31, 1911. On Oct. 10, 1911, the Liberal ministry of Sir Wilfrid Laurier was succeeded by a Conservative ministry under the premiership of R. L. Borden. It was composed in 1914 as follows: Premier, Sir Robert Laird Borden; minister of trade and commerce, Sir George Eulas Foster; interior, Dr. William James Roche (from Oct. 29, 1912); public works, Robert Rogers (from Oct. 29, 1912); railways and canals, Francis Cochrane; finance, William Thomas White; postmaster-general, Louis Philippe Pelletier; minister of marine and fisheries, John Douglas Hazen (also minister of the naval service); justice, Charles Joseph Doherty; militia and defense, Samuel Hughes; secretary of state, Louis Coderre (from Oct. 29, 1912, also minister of mines from Feb. 10, 1913); minister of labor, Thomas Wilson Crothers; inland revenue, Wilfrid Bruno Nantel; customs, John Dowsley Reid; agriculture, Martin Burrell; ministers without portfolio, George Halsey Perley, Albert Edward Kemp, and James Alexander Lougheed; solicitor-general (not in the cabinet), Arthur Meighen (from June 26, 1913).

Each of the provinces has an elected legislature, an executive (lieutenant-governor) appointed by the governor-general and acting through a responsible ministry.

HISTORY

The Governor-General. Early in May, 1914, it was announced that Prince Alexander of Teck, Queen Mary's younger brother, would succeed in October to the post of governor-general and commander-in-chief of the Dominion of Canada, upon the expiration of the three-year term of Prince Arthur, Duke of Connaught and Strathearn, who assumed office Oct. 10, 1911. In America, as well as in the far distant Australasian colonies of the British Crown, this appointment of a second prince of the royal family as Canadian governor-general gave rise to the query whether the office was to be filled henceforth solely by persons of royal birth, and elevated to the dignity of what might be styled a secondary British throne. In Canada the appointment was interpreted as a high compliment, and the Montreal *Star* printed the forecast—which sounds somewhat oddly to citizens of a republic—"it goes without saying that he (Prince Alexander) will continue the democratic tradition at Rideau Hall." Prince Alexander, however, had no opportunity to continue or to abandon the democratic tradition at Rideau Hall; for when the month of October arrived, Canada, along with the whole empire, was engaged in a titanic war, and on account of the war the Duke of Connaught was retained in office.

Naval Policy. The outstanding feature of Canadian politics in 1913 had been the wordy battle waged over the government's proposal to contribute $35,000,000—the cost of three superdreadnoughts—to the Imperial navy. A hostile Liberal majority in the Senate of the Dominion Parliament had defeated the project, but only temporarily; and it was generally conceded that the whole tenor of Canadian naval policy remained wavering in the balances of party-politics. While public opinion continued to be agitated on the subject, the premier seemed content to bide his time. During the course of the debate in January on the Address in Reply to the Speech from the Throne, he intimated that the naval question would not be reopened until the government had gained a majority in the Senate, and it would be possible to atone for the Senate's regrettable decision of last year. "So far as the permanent policy of naval defense is concerned, I gave a pledge to the people previous to the last general election that it should be submitted to them at a general election before it should be undertaken. That pledge still holds good." His quiet confidence was only strengthened by an incident in March which caused no little confusion in the ranks of the Liberal Opposition. On March 17 Mr. Churchill in a speech that has already become famous, alluded to the failure of Canada to participate in the work of imperial naval defense. Immediately the Montreal *Star* came out with the sensational headline, "Canada's Shame," bitterly lamenting that Canada's delinquency had given the First Lord of the Admiralty occasion to administer such a public rebuke, and concluding: "The whole blame for this biting national humiliation . . . rests upon the Liberal majority in the Canadian Senate, which killed the only naval bill that could possibly have passed last session." The Liberal party was thus on the one hand subjected to the most violent reproaches, while on the other hand it found itself obliged to defend Sir Wilfrid Laurier's pet policy of creating local colonial fleet units against the new policy enunciated by the British Admiralty of concentrating colonial as well as imperial first-class warships where they would do the most good—in European waters watching the dangerous German navy. Rather than alter its own policy, the Liberal press of Canada now accused Mr. Churchill of inconsistency and vacillation.

Reforming Parliament. Under normal conditions, Sir Robert Borden could not hope to build up a ministerial majority in the Senate except by waiting for Liberal Senators to die off, one by one, and appointing Conservatives to fill their places. During the months of March, April, and May, he gained four seats in the Senate by the deaths of three (including Sir George Ross, the Liberal leader in the Senate) and the withdrawal of one Liberal Senator. But this process was too slow. When Parliament was opened in January, 1914, Sir Robert Borden explained his plan for the creation of 9 new senatorial seats, which would be distributed, 2 to Manitoba, 2 to Saskatchewan, 2 to Alberta, and 3 to British Columbia, so that these four western provinces would have six senators apiece, as their recent growth well warranted. Incidentally, the nine new seats might be filled with Conservatives. Parliament was therefore asked to consent to an amendment of the British North America Act, and one of the ministers was sent to London to take up the question with the Imperial government. Meanwhile the most diverse opinions were ventilated as to the proper place, constitution, and authority of the Senate, and the possibility of abolishing the upper chamber.

The government proposed also to redistribute the representation in the lower house of the Dominion Parliament. Important movements of population since the last redistribution (in 1903) made it necessary to increase the membership of the House from 221 to 234, the representation of Quebec remaining fixed at 65 members as the standard for determining the unit of representation. A summary of the changes is subjoined:

	Before		*After*
Alberta	7	Increased by 5	12
British Columbia	7	Increased by 6	13
Manitoba	10	Increased by 5	15
New Brunswick	13	Decreased by 2	11
Nova Scotia	18	Decreased by 2	16
Ontario	86	Decreased by 4	82
Prince Edward Island	4	Decreased by 1	3
Quebec	65		65
Saskatchewan	10	Increased by 6	16
Yukon Territory	1		1
Total	221	Increased by 13	234

It will be readily observed that whereas the eastern provinces stood to lose 9 seats, the western provinces might rejoice in a gain of 22. No one disputed the growth of the West, or its importance in wealth and population, which had increased by leaps and bounds; but the citizens of the eastern provinces, as represented by Mr. Mathieson (premier of Prince Edward Island), Mr. Flemming (premier of New Brunswick), and Mr. Murray (premier of Nova Scotia), did protest, and that most earnestly, against the diminution of their own representation. Mr. Mathieson even produced original documents to prove that by the terms of the union Prince Edward Island was always to have at least six members in the Dominion House of Commons.

The Tariff and the Budget. While naval policy and parliamentary reform occupied the centre of the stage, a less conspicuous place was found for the perennially interesting subject of the tariff. In January the Manitoba Legislature unanimously adopted a resolution asking the Dominion government to remove the countervailing duty on wheat, thus opening the market of the United States to West-Canadian farmers. Also in the Dominion Parliament a demand was raised for the removal of food-duties; but Mr. White, the minister of finance, declared that abolishing the food-duties would not reduce the cost of living, but would simply add to the present troubles by throwing over fifty thousand men out of work. Consequently it was not much of a surprise when the draft budget for 1914–15, presented April 6, entirely omitted any downward revision of the tariff. Sir Wilfrid Laurier in vain offered an amendment: "that wheat and wheat products and agricultural implements be placed on the free list, and that steps be taken to alleviate the high cost of living by a considerate removal of taxation"; but his amendment was straightway defeated by a clean party vote of 88 to 46. In explaining the budget, Mr. White remarked that although the past fiscal year (1913–14) had been characterized by a severe financial stringency and a falling-off of $5,000,000 in the Dominion revenues, he hoped that for 1914–15 there would be a surplus of $36,500,000 over the ordinary expenditures; but this surplus would all be consumed in special expenditures, and the government would increase its debt by $19,000,000, which amount was to be advanced to aid various railways.

Government Aid for Railways. In order to insure the rapid development of her enormous uncultivated areas, Canada has had to grant lavish aids and subsidies to the private corporations which have undertaken to build her railways. The administration of such sums has, however, not always been above suspicion of blame; for example, a commission appointed to investigate the cost of the National Transcontinental portion of the Grand Trunk Pacific Railway reported a wastage of $40,000,000. Nevertheless, short of government ownership, there was no alternative to subsidizing private enterprise, however wasteful or untrustworthy. When, therefore, the Canadian Northern Railway appealed to the government for a loan of $20,000,000 or more, it was expected that some assistance would be granted, for the sake of enabling the company to complete its construction work, although a different form of assistance might be chosen. Finally the government decided to guarantee a bond issue for the railway to the amount of $45,000,000, and at the same time to insist upon the reorganization of the company. The capitalization of the Canadian Northern and subsidiary companies, amounting to $145,000,000, was reduced to $100,000,000 in a new merged company, of which the government received stock to the par value of $40,000,000, including the $7,000,000 stock transferred to the government last year when a subsidy was granted to the railway. Sir W. Mackenzie and Sir Donald Mann owned the remaining $60,000,000 of the capital stock. As safeguards in consideration of the bond guaranty, the government required (1) that the proceeds of the bond issue should be used solely for the completion of the Transcontinental system, and (2) that should the company at any time fail to meet its obligations, the government might summarily dismiss the present directors, or might vest the enterprise in a new corporation, or might take over the road directly in trust for the people. These proposals, endorsed by the Conservative and condemned by the Liberal caucus, were vigorously opposed in the House of Commons by Sir Wilfrid Laurier, who declared that public funds to the amount of $280,209,705 had already been advanced to the Canadian Northern, and asserted that if the government invested so much of the people's money in the enterprise, the government ought not to be in the position of a mere minority stockholder, with Sir William Mackenzie and Sir Donald Mann reaping all the profits, but should assume a controlling interest in the Transcontinental system. After an acrimonious discussion, in the course of which the demand was made for a Parliamentary investigation of the Canadian Northern, on May 28 a series of resolutions were passed approving the government's scheme, and a bill embodying the same was finally approved by the Senate June 9; whereupon the arrangement was effected with the Canadian Northern, July 16. Another railway enterprise was much discussed in 1914, for the construction of a railway 1500 miles long in the region of the Canadian Rocky Mountain coal deposits; the backers of the scheme, among whom D. A. Thomas (of Cardiff, Wales,) was chief, applied for a charter under the corporate name of the "Pacific Peace River and Athabasca Co." An even grander project—to connect Georgian Bay with the St. Lawrence by canal—was referred to a commission. It is also worth noting that the government received a petition begging it to establish a transatlantic steamship line in order to counteract the exactions of the North Atlantic shipping combine.

Sundry Items. The government brought in a bill on February 17 to regulate the incorporation of trust companies and to require the auditing of accounts of such companies, and the furnishing of detailed returns to the Finance Department showing all investments. A parcels post was inaugurated February 9, with rate-schedules considerably lower than the existing express rates; in consideration of the increased volume of postal business, the railways received an increased subsidy of about $3,000,000 in place of $2,000,000 a year. With regard to public lands a new arrangement was proposed in January, 1914, by the premiers of Manitoba, Saskatchewan, and Alberta, in a joint letter to Sir Robert Borden; the three provincial premiers proposed that the Dominion government should surrender to the provinces its control over public lands, timber, coal, and other natural resources, and at the same time continue to pay the cash subsidies which were originally granted to the provinces in lieu of their natural resources. The question was debated in the Dominion Parliament during February, at which time Sir Robert Borden stated that he could not accede to the demand without undertaking a sweeping revision of the whole system of financial relations between the Federal government and the provinces.

The interesting question whether titles of honor, conferred by the Crown, are incompatible with the spirit of democracy, was raised in the House of Commons in February, when Mr. Burnham introduced a bill to abolish all titles in Canada; Sir Wilfrid Laurier agreed in principle and suggested that an Address to the King would be better than a bill; the government, however, defended the bestowal of titles and the bill was defeated. Among trade-unionists a lively interest continued to be shown in the fate of the men who were last year imprisoned for rioting in connection with the Vancouver Island coal strike. As the last New International Year Book (page 118) recorded the facts, the strike began on May 1, 1913, and led to disastrous rioting in August, 1913; in 1914 the strike still dragged on. In April it was necessary to send 200 more soldiers to Nanaimo (on Vancouver Island) for the preservation of order while the United Mine Workers of America held a mass meeting on May 1 as a mark of sympathy for the miners who had been out on strike just a year. As far as the men arrested last year were concerned, 46 who pleaded guilty of unlawful assembly were released on suspended sentence by the Special Assize Court on March 24, 1914; 8 were sentenced to one year; Joe Angelo of the United Mine Workers of America was given four years' penal servitude; and John Place, a Socialist member of the British Columbia Legislature, was convicted of "unlawful assembly," but was released without further imprisonment. On June 19 an explosion in the Hillcrest coal mines (near Fernie, B. C.) killed 189 miners. Little was heard of this disaster, but a wave of horror swept over the land when about a thousand lives were lost in the sinking of the *Empress of Ireland*, May 29, in the St. Lawrence River, after collision with a Norwegian collier. See SAFETY AT SEA.

THE KOMAGATA MARU. One of the most remarkable episodes of the year was the attempt of a shipload of Hindus to secure admission into Canada in spite of the determination of the Canadian government to prevent the influx of Asiatic immigration. As more fully explained in the article on INDIA, the subjects of Great Britain's Indian Empire keenly resented the avowed intent of the British self-governing colonies to debar Indian laborers, and particular irritation was caused by the hypocritical Canadian law which forbade the entry into Canada of Orientals except by direct passage from the land of their birth, thus excluding Indians, because there was no steamship line on which they might pass directly from India to Canada. To fulfill the requirements of this law, Gurdit Singh, a wealthy Hindu contractor, chartered a Japanese steamer, the *Komagata Maru*, upon which he and 379 other Hindus voyaged from Calcutta to Vancouver, not setting foot on land at any intermediate point. When the *Komagata Maru* arrived in May off the coast near Vancouver, she was moored some distance from the shore and no one allowed to land until examined by the immigration authorities. First there was the medical examination, which enabled the authorities to reject 90 of the would-be immigrants; then there was an order in council, recently promulgated, which forbade the entry of artisans, owing to the overcrowded condition of the industrial-labor market; and then there was the question whether the Hindus could not after all be excluded under the "direct passage" rule, since their ship had touched at Hongkong on the way over. It was clear that the authorities would strain these rules to the utmost in order to exclude the Hindus, and the minister of the interior publicly stated that with the exception of 13 who had previously lived in Canada, the Hindu immigrants would be shipped back to Asia, unless the courts should forbid. The attitude of the Hindus, on the other hand, grew steadily more defiant. Gurdit Singh had thrown down the gauntlet: "We are British subjects. Let them keep us out if they dare, and think of the consequences to our British Empire in India." As the days lengthened into weeks, and still admission was denied, the Hindus resorted to a hunger strike, and cabled a message to King George saying that they had been starving and without water for two days and had not been permitted to land to obtain supplies; but the officials affirmed that the *Komagata Maru* was well provisioned. Then, it was said, the Hindus engaged in weird religious ceremonies, dancing on deck and beating their cymbals and gongs in a frenzy of despair. Meanwhile at Ottawa the Dominion Parliament was passing a Naturalization Bill, designed with a view to securing uniformity within the British Empire; and at Victoria the Court of Appeals was hearing the plea of Munshi Singh, one of the Hindus, who applied for a writ of habeas corpus. The court handed down a decision which extinguished the last hopes of the immigrants; and on July 19 a hundred Vancouver policemen set out to compel the *Komagata Maru* to sail for Hongkong. But the Hindus, now thoroughly enraged, beat off the police and refused to leave. They were not prepared, however, to offer like resistance to the menacing guns of the Canadian cruiser *Rainbow*, which presently appeared on the scene. Cowed in spirit, and totally defeated in their purpose, they at last consented to depart peacefully, provided the government would defray the cost of their return passage and provision. This being done, the *Komagata Maru*, with over 350 Hindus on board, put out to sea July 23 on her return passage to Asia. It was hoped that this closed the incident; but in October news was received that in Canada one of the immigration inspectors, William C. Hopkinson, had been murdered by a Hindu, and that in India the returned passengers of the *Komagata Maru* had engaged in a serious riot.

CANADA'S LOYALTY IN WAR. The fact that a large number of Canadians had long insisted on speaking French instead of the English language, and the growing spirit of independence in the colony, had led many observers to suspect that Canada was but loosely bound to the British Empire. But with the approach of war, in those terrible first four days of August, Canada suddenly became unanimously and enthusiastically loyal. Everywhere was manifested the same air of calm conviction that in the forthcoming struggle, if struggle there was to be, Canada would zealously take her part in the defense of the Empire. On July 31 Mr. Hughes, minister of war, had declared that in event of Great Britain's declaring war, Canada could have 20,000 soldiers on transport ships within a fortnight. On August 1, the governor-general informed the British government that "if unhappily war should ensue, the Canadian people will be united in a common resolve to put forth every effort and make every sacrifice necessary to ensure the integrity and maintain the honor of our Empire." On August 3 the Canada *Gazette* published an Imperial proclamation calling out the Royal Naval Reserves; and when war was declared on the night of August 4–5, crowds in the streets and theatres sang the national anthem and cheered the name of the king.

Three hours after the declaration of war, the Canadian government issued a call for Parliament to meet on August 18; in opening the special session the Duke of Connaught proudly boasted "the spirit which animates Canada inspires His Majesty's dominions throughout the world, and we may be assured that united action to repel the common danger will not fail to strengthen the ties that bind together these vast dominions." Instead of offering his usual carping comment, Sir Wilfrid Laurier promised the whole-hearted support of the Opposition in this great fight "for freedom against oppression, for democracy against autocracy, for civilization against reversion to that barbarism in which the supreme law, the only law, is the law of might." It took the Parliament only five days to pass the necessary eight war bills, and to appropriate $50,000,000 for war expenditures. This sum was to be raised by increasing the customs and excise duties on sugar, spirits, coffee, and tobacco.

Meanwhile patriotic enthusiasm was rampant throughout the length and breadth of the land. Manitoba was offering to create a battalion of infantry; Hamilton Gault of Montreal was equipping a special regiment, the "Princess Patricia's Light Infantry," at a cost of $100,000; the Dominion government was donating 1,000,000 bags of flour to Great Britain; the Hindus of Vancouver were offering to equip 500 Hindu soldiers who had seen service in India; Mr. J. K. Ross generously gave $500,000 to the finance minister, out of a fortune made in Canadian coal and iron; the province of Quebec proffered 4,000,000 pounds of cheese; Nova Scotia promised 100,000 tons of coal; J. C. Eaton of Toronto gave $100,000 for a battery of quick-firers and offered his yacht *Florence*, the fastest on the Great Lakes, as well as his wireless station at Toronto, the most powerful north of Long Island, for the use of the government; Prince Edward Island came forward with 100,000 bushels of oats, British Columbia with 25,000 cases of tinned salmon, Manitoba with 50,000 bags of flour, Ontario with 250,000 bags of flour, Saskatchewan with 1500 horses; Sir Thomas Shaughnessy donated a hospital ship to be equipped by the women of Canada; the Bank of Montreal contributed $100,000 and the Canadian Pacific a like amount; and a Patriotic Fund was started by popular subscription, which by October 12 exceeded $5,000,000.

Gratifying as were such manifestations of loyalty, they would not fight the Empire's battles. Now the Canadians sighed for warships to offer; fortunately Canada was able to purchase two powerful submarines, just completed for Chile, and to place them at the Admiralty's disposal, together with the Canadian cruisers *Niobe* and *Rainbow*. And as for soldiers, Canada immediately offered to send an expeditionary force of 20,000 or more, and issued a call for volunteers. So generous was the response, that within three weeks there were 32,000 men in the Canadian training camp at Valcartier, preparing for active service, and almost 10,000 others under arms; while 150,000 had volunteered their services and were waiting only to be called. Consequently Colonel Hughes, minister of defense, was able to announce that the Canadian expeditionary force would be increased to 31,200 men and 7500 horses. The expeditionary force of over 30,000 was dispatched, and Canadian soldiers were sent to garrison Bermuda and Newfoundland, and still there were—as was announced on October 12—some 200,000 men drilling in Canada. On October 18, Sir Robert Borden declared that Canada would keep 30,000 volunteers continually in active training, to be drawn upon in units of 10,000 at regular intervals during the course of the war. The first Canadian contingent, which was transported by giant liners to gladden the eyes of English folk at Plymouth (where the Canadian expeditionary force arrived on Oct. 14, 1914), and to share in the battle for Britain, was but the beginning.

Not to be overlooked was the effect of the war in welding together the French and the English factions in Canada. The friction between French Canadians and English Canadians had been especially irritating before the outbreak of the war. In Ontario, for example, the question of teaching French in schools in French districts was so warmly agitated that an Irish professor was removed by the French-Canadian authorities of Ottawa University and the English-speaking students went on strike in April. Similarly in Montreal old jealousies were revived by the election of a French-speaking mayor for the term which had customarily been given to one of English extraction. Where the English-speaking population prevailed, the French had for long years been subjected to slights, it was argued, and therefore in places where the French element was in a majority the English could hardly complain if their privileges were curtailed. Again in Winnipeg the issue was raised, this time on religious rather than linguistic grounds, when in April a big Catholic banquet refused to give the King precedence over the Pope on the list of toasts. Several prominent persons placed a political interpretation upon this incident and accused the Catholics—who were largely French Canadians—of being disloyal to the King; but this quite unjustifiable accusation was strenuously repudiated by the Catholics, who demonstrated their unimpeachable patriotism by singing the National Anthem at their banquet before honoring the toast of "the Pope." Bishop Fallon of London, who was the principal speaker, even carried the war into the enemy's camp by saying, "It is late in the day to teach us a lesson in loyalty, with Sir Edward Carson drilling to drive the Empire to irremediable ruin." But all these petty quarrels and misunderstandings vanished in a moment when war was declared, and while Frenchmen and Englishmen fought side by side in the Old World, French and English Canadians in the New World were drawn together in a new bond of union. To the 2400 French-Canadians who joined the first contingent Colonel Hughes paid unreserved tribute of praise; in addition, with the warm approbation of Sir Robert Borden, the French Canadians of Quebec and Ontario undertook to raise a special French regiment; and it was suggested that 15 French regiments might eventually be formed. For other items of interest see articles on the separate Provinces of the Dominion.

CANADIAN RAILWAYS. See CANADA.

CANALS. Aside from the Panama Canal which is discussed under its own head some of the more notable work of the year is outlined in the following paragraphs.

CAPE COD CANAL. The Cape Cod Canal, the construction of which had been under way for a number of years, was formally opened on July 29, 1914, and communication established between the waters of Buzzards Bay on the south and those of Cape Cod Bay on the north, shortening the distance between Vineyard Sound and Boston by about 70 miles, and eliminating considerable danger due to hidden reefs and banks along the coast of the cape, and the prevalence of fogs. The canal is a sea-level canal without locks, and practically a straight line with but a single curve. It is lighted by electricity at night, so that a passage can be made at any time either night or day. The railway and highway bridges, which are modern, are structures mostly of the bascule type, having a width of 150 feet in clear between the piers. For the greater part of its length the canal has a bottom width of 100 feet and a depth of 25 feet at mean low water, and at three points the bottom width is increased to 250 feet so as to make passing points for vessels, while in the approaches a width of 250–350 feet is maintained in the channel which extends to deep water at both ends of the canal, the two approaches having a combined length of about five miles. In addition to the excavation an important engineering feature was the massive breakwater, 3000 feet in length from the shore line, to protect the entrance of the canal from filling in by the action of the waves, in addition to forming a shallow harbor for shipping. The excavation for the most part was done by hydraulic dredges. There were two of these machines, capable of handling 4000 cubic yards per day, and the most difficult part of the work, which aggregated the handling of 20,000,000 cubic yards, was to remove a deposit of bowlders, some of which were of large size. These were excavated by a type of steam shovel. In addition to its commercial features the Cape Cod Canal forms a link in the scheme of water commerce along the Atlantic Coast and thus possesses some strategic and military value. The water traffic from the south to New England amounts annually to $25,000,000, a large part of which is coal, and the increased safety and shortening of the trip around the cape were expected to prove important commercial factors for New England. The tolls for passage through the canal as set at the time of opening ranged from $3 for motor boats and other small craft to $70 for freight vessels of from 950 to 999 tons. Those over 1000 gross tons were to pay 10 cents per gross ton for each passage.

At the time of opening, the Cape Cod Canal as finished was fully 25 feet deep at low water, except for about one mile in its central portion, where dams separating the two parts had been placed, there being at this time only about 18 feet depth at this portion. During the remainder of the year this central section was being removed and the canal generally put in order for deep draft ships in the spring of 1915. The work of improvement undertaken during the closing months of the year included the lighting of the channel with electric lamps for a 500-foot distance, the placing of piles at either end and near the approaches, where vessels might moor, and other work necessary to the passage of large steamers and deep draft barges in the summer of 1915. The United States government was engaged in installing buoys in the Buzzards Bay approach and constructing a lighthouse on the end of the breakwater in Cape Cod Bay. From the time of opening to the end of the year yachts, fishing schooners, and other small craft to the number of 600 passed through the new channel and the number was increasing daily. In bad weather, which occurred off Cape Cod during December, the canal was eagerly availed of by such craft.

Towards the end of the year lower tolls through the Cape Cod Canal were made effective to meet the needs of crude material carriers engaged in traffic to and from New England. Vessels carrying loads through the canal were thus entitled to use the canal free when returning empty.

New York Barge Canal. During the year the engineers of the western division of the New York State Barge Canal prepared plans for the construction of a section of the canal under six railroad crossings at Rochester and six west of that city. This work had been postponed on account of litigation as to the right of the State to exercise eminent domain in the case of the land occupied by the railroads. It was decided that the State had this right, but it must build and maintain approaches necessary for crossing the railroads. By the end of September it was stated that about 70 per cent of the work on the canal between Buffalo and Albany had been turned over by the contractors to the State.

The total length of waterway involved in the improvement of the various systems, embraced in the New York Barge Canal, including the lakes forming a part thereof, was approximately 530 miles, 435 of which were embraced in the improvement of the Erie, Oswego and Champlain canals, and 95 of which were embraced in the Cayuga and Seneca canal system. Of this total mileage the State Engineer and Surveyor of New York reported that there had been completed to Dec. 1, 1914, approximately 300 miles on the Erie, Oswego and Champlain canals improvement and 70 miles on the Cayuga and Seneca canal improvement, making a total of 370 miles of completed waterway of dimensions sufficient to accommodate Barge canal craft. Or in other words, approximately 70 per cent of the entire length of the contemplated improved canal system had been completed to Barge canal dimensions on that date. Of those portions which had not been completed in their entirety it was conservatively estimated that the work for such sections was at least 80 per cent completed and that the balance of the work necessary to complete such sections should be performed in such time as to permit the entire Barge canal system being utilized sometime during the navigation season of 1916 or by the spring of 1917 at the latest.

The State Engineer and Surveyor of the State of New York reported to the legislature on Dec. 29, 1914, that of the total amount of work contracted for there has been performed work amounting approximately to $72,700,000 and there was uncompleted on contract approximately $8,500,000 worth at the end of the fiscal year. On the Cayuga and Seneca Canal at the end of the fiscal year there had been placed under contract work to the amount of $4,852,735, on which there had been completed $3,058,572.

At the end of the year all the important structures provided for in the Barge Canal system had been completed with the exception of the guard gate and dam at Rochester, which had been delayed on account of the railroad crossing interference and the delay in providing a scheme of construction in the Genesee River. The completion of the dam at Crescent was to be hastened so that the work would be finished prior to the opening of navigation in the spring of 1915, and make possible the canalization of the Mohawk River from Waterford to Schenectady. By the spring of 1916 it was estimated that the canal from the Hudson

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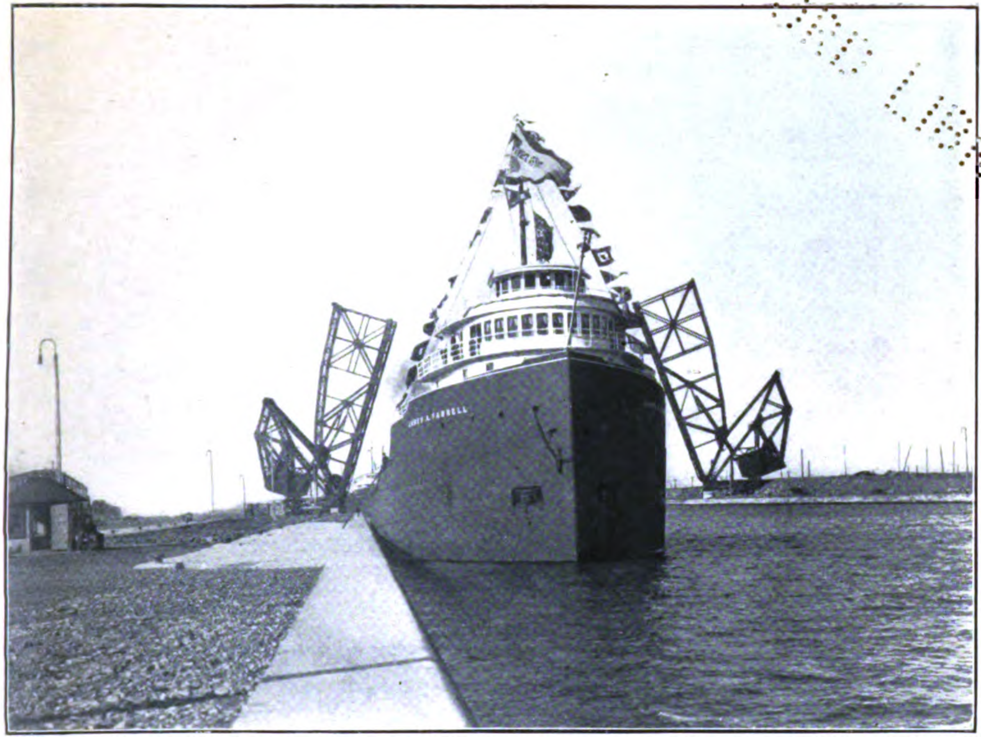
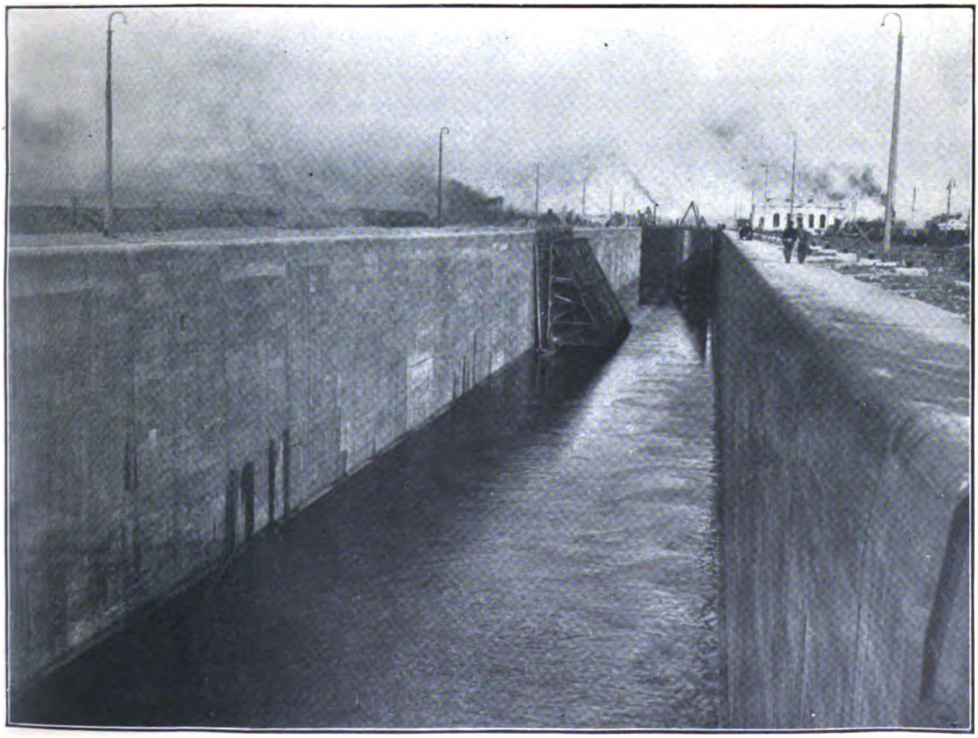
CANAL



LAKE STEAMER "JAMES A FARRELL" IN NEW CANAL AWAITING THE FIRST DOWN LOCKAGE.
BASCULE BRIDGE OF CANADIAN PACIFIC RAILWAY IN THE BACKGROUND
ERECTED 1914 WAS THE LARGEST BRIDGE OF THIS TYPE



GENERAL VIEW OF 3d LOCK LOOKING EAST FROM GATE No. 3

NEW ST. MARYS CANAL AT SAULT STE. MARIE, MICHIGAN

River at Waterford to the city of Oswego on Lake Ontario would be completed to the Barge Canal Terminals, and that portion of the Erie Canal from the junction of the Erie and Oswego Canals at Three River Point as far westerly as the old canal aqueduct in the Montezuma Marshes was nearly completed at the end of the year, as was also the connecting channel from Onondaga Lake to the Seneca River, while in the vicinity of Lyons changes in the plans had somewhat delayed the work.

In regard to providing Barge Canal Terminals as authorized by Chapter 746 of the Laws of 1911, by the end of 1914 contracts had been entered into for the construction of terminal walls, piers, etc., at Erie Basin in Buffalo and Gowanus Bay in New York City, at Oswego, at Thomson and at Troy. Terminal contracts were completed at Fonda, Frankfort, Herkimer, Ilion, Ithaca, Little Falls, Lockport, Whitehall, and Albany, while the construction operations at Schenectady, Amsterdam, Fort Plain, and Plattsburgh were practically completed. Contract plans were prepared for other places and for incidental works involved, while much was done in the way of considering plans for operating machinery and warehouses for the handling and storing of freight.

St. Marys Falls Canal. On October 21 the Davis lock, the new third lock, and the separate canal on the American side at Sault Ste. Marie were opened to commerce. The new lock is 1350 feet long between gates, affording a usable length of not less than 1300 feet with a width of 80 feet and a least depth of 24½ feet over the sill. The new separate canal had a width of from 260 to 300 feet. The increased depth of the lock made it no longer necessary for the heaviest draft vessels to use the Canadian canal on account of the limited depth of about 18½ feet at low water through the Poe or second American lock. On the first down lockage two steamers carrying 23,000 tons of ore were passed through. The first appropriation for the work was made in 1907 and excavation was in progress since 1909, the masonry being built in 1912 and 1913 and the machinery and gates during 1914. There are two pairs of operating gates in each of the locks so that the total length of the masonry is 1750 feet. The new lock can be filled or emptied in a little more than six minutes, and will accommodate two of the largest lake steamers with one operation. The new canal is crossed by a long Straus bascule bridge, carrying a railway track.

During the season of 1914, which was 214 days, the number of vessel passages through the Sault Ste. Marie canals aggregated 12,639 for the United States canal, and 6078 for the Canadian canal, making a total traffic of 18,717 vessels. The net registered tonnage was 24,690,381 for the United States canal and 17,295,985 for the Canadian canal or a total of 41,986,639. The more important items in the list of articles carried through the canals eastbound were iron ore, 31,410,069 tons, wheat 150,284,095 bushels, and grain 68,338,072 bushels, while westbound 2,240,505 tons of hard coal and 12,246,716 tons of soft coal were the more important articles of commerce.

The Hohenzollern Canal. This canal, joining the rivers Oder and Spree, and connecting Berlin, the capital of Germany, by water with Stettin on the Baltic Sea, 150 miles distant, was opened on June 17 by the German Emperor. The history of this canal dates back to 1669, and its completion marks an epoch in the development of German inland waterways, but it has had other effects in producing cheap transportation in Germany. It makes it possible for vessels of 600 tons and under to go to Berlin from the Baltic, with a saving of more than 50 per cent in freight rates as compared with those of the railways. The canal cost $12,500,000, and it was estimated that some $3,000,000 worth of freight would be shipped annually through the new waterway, while there would be a corresponding benefit to the important seaport of Stettin on the Baltic.

Kiel Canal. During the year the new locks of the Kaiser Wilhelm Canal or Kiel Canal were formally opened on June 24. This canal, which was completed in 1895 after eight years of work, extends from the mouth of the Elbe on the North Sea to Kiel on the Baltic, a distance of about 60 miles. It was constructed to have a normal width of 72 feet at the bottom and 220 feet at water level, with a depth of 29½ feet. This canal is an important element in the German scheme of naval defense, and the reconstruction of the locks and increased depth have resulted largely from military necessity. The locks as first built were 492 feet long, 82 feet wide, and 32 feet deep, being arranged to take care of the large tide variations at the western entrance, and the differences and variation of water level in the Baltic, due to gales. The locks at Kiel remained open most of the time, while those at the Elbe were operated only at certain times. The reconstruction of the canal, begun in 1907, involved its enlargement so that when finished in 1914 it had a width of 335 feet at the surface and 144 feet at the bottom, and a depth of 36 feet, while new locks were built at each end. These new locks have an available length of 1082.6 feet and a width of 147.6 feet, while intermediate gates could be used to have a chamber 328 feet long. These locks are of greater length than those of the Panama Canal. The cost of reconstructing the canal was approximately $55,000,000.

Baltic-Black Sea Canal. During the year a favorable report was submitted by the commission appointed by the Russian Duma and Senate in 1910 to consider the proposed Baltic-Black Sea canal scheme. The project involved the canalization of the Dnieper and the Dwina, the former flowing into the Black Sea at Kherson and the latter into the Gulf of Lavonia at Riga. These two rivers are separated by a divide at their sources, and they would be connected here by artificial waterways, so that the total length of canal of 1540 miles would be established.

Norway. During the year the scheme for a waterway between Lake Mjösen, Norway and the sea was brought up and a part of the canalization of the Glommen River was proposed. This would involve building several dams on the section from Vamma to Mörkfas, so as to make the Glommen navigable from Oieren to Sarpsborg and on to Fredericksstad. Natural locks would have to be constructed and various schemes of locks and tunnels in order to make a passage from Scarpsfos Falls feasible.

CANAL TOLLS. See Panama Canal Tolls.

CANARY ISLANDS. A group of islands off the northwest coast of Africa, constituting a province of Spain. Area, 2808 square miles, with a population (1910) of 444,016, of whom 162,601 in Gran Canaria, 45,782 in Palma, 180,327 in Teneriffe. The capital is Santa Cruz de Tenerife, with (1910) 63,004 inhabitants; Las Palmas, the most important town, had 62,886. The leading products and exports include potatoes, bananas, onions, tomatoes, and nuts.

CANCER. Abderhalden demonstrated the presence in the blood of animals of certain substances called by him "protective ferments," produced as the result either of experimental stimuli or pathological conditions. Abderhalden's sero-diagnosis of cancer was applied by Ball in 51 examinations for malignant conditions in the body and the reaction was always positive. In clinically malignant growths it was positive in 20, and negative in 8 cases in which there was a suspicion of malignancy; and positive in 4 and negative in 12 out of 16 clinically nonmalignant cases. In other words a diagnosis could be made by clinical symptoms without the aid of this intricate method of investigation in the vast majority of cases. For a masterly review of the whole matter, consult Bainbridge, *The Cancer Problem* (New York, 1914).

Davis calls attention to the frequency of **PARAFFIN CANCER** among workers in this material. Pure paraffin apparently is not concerned in the production of skin lesions, but rather the irritating substance separated from crude paraffin during the process of refining. The substance which seems to be implicated is the "pressed distillate." The crude paraffin is run into great presses and the distillate or heavy oil squeezed out. The paraffin remaining in the press, termed "slack wax," is scraped off by men who use spade-like instruments and work, as a rule, bare-armed. During the first few months of this employment the men suffer from "wax boils," affecting principally the arms and neck. After a number of years pigmented spots make their appearance on the skin of a certain proportion of the workers. Some of these spots are scaly, resembling the lesions of psoriasis; others are small rust-colored areas. These may be followed by wart-like growths, and finally by true epithelioma. It is believed by those familiar with the industry that protection of the skin from contact with the distillate, and strict cleanliness, prevent the development of all of these lesions.

ANILIN CANCER seems to affect the urinary passages, particularly the bladder, in workers among anilin dyes. The substances possessing the necessary irritating qualities are most of them distillation of coal and petroleum products and the tumors which they induce belong therefore to the tar and paraffin cancer group.

TOBACCO CANCER. Melzer in 1850 attracted attention to tobacco cancer. He studied the incidence of the disease at the General Hospital at Laibach during the years between 1787–1849; 433 patients had cancer and of these 142 had the growth upon the lip, 127 were men and 15 were women, all in adult life. These people smoked wooden, copper-sheathed pipes, with stems not over two inches long, so that the bowl came into almost direct contact with the smoker's lips. Among Stokes's 350 cases of cancer of the lip, only three were women, and these were assiduous smokers—peasants from the west of Ireland. Most statistical studies of the incidence of cancer indicate the marked prevalence of the disease in the upper digestive and respiratory tract in the male sex, which is especially addicted to tobacco. Russell points out that cancer of the jaw and tongue increases with the increase of the habit of smoking. In Switzerland from 1905 to 1909 cancer of the lip was five times more frequent in men than in women, lingual cancer 10 times more frequent in men, and cancer of the larynx, parotid glands, and pharynx seven times more frequent. The irritating substances in tobacco are probably not only contained in the smoke, but also in the tobacco juice. Cancer of the cheek and mucous membrane of the mouth is apparently often produced by holding masses of tobacco against the cheek.

KANGRI-BURN CANCER occurs on the thighs or abdomen of the people of Kashmir in consequence of the custom of carrying a portable fire-basket beneath their clothing. Of 4902 tumors removed in the Kashmir Mission Hospital in the course of 25 years, Neve found 1720 were malignant, 1189 epitheliomatous or surface growths, and 484 were on the thighs or abdomen. Neve believed the irritation to be due to the heat, but other investigators point out that the skin of these patients is also subjected to the action of soot and gaseous emanations from the fire-baskets. In this connection it may be pointed out that chimney-sweep's cancer is undoubtedly due to the irritation of soot and is believed to be associated etiologically with the character of the coal (pit coal) which is used in England. Apparently this produces irritation of the skin similar to that brought about by paraffin and tar. Davis sums up his studies by pointing out the similarity of the lesions following chronic irritation of the above types, which he thinks suggests a similarity or even identity of the irritating agents in the several classes of cancer. The assumption is inevitable that there is some chemical body residing in certain coal and petroleum products which is capable of inducing inflammatory reaction in the tissues and finally epithelioma. Ross, Cropper, and Ross declare that they have demonstrated the presence of chemical bodies, 25 or 30 in number which are capable of inducing cell division in the human body. These substances they term "auxetics." Auxetics have been demonstrated in gas works tar, but not in blast furnace tar. They can induce atypical epithelial overgrowths in animals by the use of gas works tar containing auxetics, but obtain negative results in experiments with blast furnace tar.

Fibiger has for some time been studying cancers found in the stomach of rats which are apparently connected with a parasite peculiar to them. This seems to be a new species of *Spiroptera* and it has been found only in the numerous rats infecting sugar warehouses. None was found in 1100 rats from other parts of Denmark, nor in 350 from other countries. Fibiger considers the cockroach to be the intermediate host and thinks that these insects were probably brought in the sugar from the West Indies. The parasites were found in seven out of eight dead rats sent in from a West Indian port and in 52 out of 70 cockroaches. See **RADIOTHERAPY.**

CAPE COD CANAL. See CANALS, and MASSACHUSETTS, *Other Events*.

CAPE COLONY. See CAPE OF GOOD HOPE PROVINCE.

CAPEN, SAMUEL BILLINGS. An American merchant and philanthropist, died Jan. 30, 1914. He was born in Boston in 1842, and was educated in public and high schools of that city. In 1859 he entered the carpet store of Wentworth and Bright, and three years later became a partner in the business which finally took the firm name of Torrey, Bright, and Capen Company. From 1882 to 1899 he was president of the Congregational Sunday School and Publication Society, and from 1894 to 1899 of the Boston Municipal League. From 1905 until his death he was president of the board of trustees of Wellesley College, and from 1906 chairman of the executive committee of the Laymen's Missionary Movement of the United States and Canada. In 1899 he was elected president of the American Board of Commissioners for Foreign Missions and it was while traveling in the East in its interests that he died in China.

CAPE OF GOOD HOPE PROVINCE. One of the four original provinces of the Union of South Africa (q.v.). Capetown, the capital, had, according to the census of 1911, with suburbs, 161,579 inhabitants (85,442 whites); Capetown municipality had 67,159 (29,863 whites). Kimberley and Beaconsfield, 44,433 (17,507 whites); Kimberley municipality, 29,525 (13,598); Beaconsfield municipality, 14,294 (3404); Kenilworth, 614 (505). Port Elizabeth, 30,688; with suburbs, 37,063 (20,007 whites). East London 20,867; with suburbs, 24,606 (14,899 whites). Grahamstown, 13,830; Paarl, 11,108; Simonstown, 4751; Vryburg, 2461; Mafeking, 2296. Of the total population, Europeans form about one-quarter and the colored races three-quarters; one-fifth of the population is urban.

The crownlands alienated in 1911 totaled 1,712,250 acres, bringing in a revenue of £62,015. Total area disposed of to December, 1911, 140,000,000 acres. The census of May 7, 1911, returned 974,266 morgen (one morgen is equal to 2.11654 acres) of land under cultivation, 376,873 morgen fallow, and 58,058,667 devoted to grazing. Wheat was grown on 230,916 morgen, yielding 1,305,006 muids; oats, 238,113 morgen, 1,228,927 muids; corn, 115,394 morgen, 1,727,864 muids; kafir corn, 9206 morgen, 299,422 muids; rye, 43,097 morgen, 144,132 muids; barley 43,002 morgen, 373,509 muids; tobacco 2084 morgen, 3,767,179 pounds; alfalfa 61,174 morgen, 100,233 tons. A muid of wheat, corn, peas, or beans weighs 200 pounds; oats and potatoes, 150 pounds; barley, 160 pounds. Wine output, 7,488,987 gallons; brandy, 617,040. There were (1911) in the province 2,715,330 cattle, 333,962 horses, 17,134,513 sheep, 7,953,414 goats, 505,730 swine, 47,159 mules, 191,086 asses, 782,087 ostriches.

The state-aided schools numbered June 30, 1911, 4306, with an enrollment of 217,095, and an attendance of 187,073; teachers, 8446.

Sir N. F. de Waal administered the province in 1914. See SOUTH AFRICA, UNION OF, for area, population, and other statistics.

CAPE VERDE ISLANDS. A group of Portuguese West African islands, having a total area of 1516 square miles, carrying a population (1910) of 142,552. Capital, Praia.

CARINTHIA. See AUSTRIA-HUNGARY.

CARLETON, BUKK G. An American surgeon and writer on medical subjects, died Oct. 20, 1914. He was born at Whitefield, N. H., in 1856, and was educated in the public schools of Littleton, N. H. He received his medical education at the New York Homeopathic Medical College, taking his degree in 1876. For a year he was in the medical department of New York University and a member of the house staffs of several hospitals. For several years he was demonstrator and professor of anatomy at the Homeopathic Medical College, and was consulting surgeon of the Hahnemann Hospital.

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. See section so entitled under UNIVERSITIES AND COLLEGES.

CARNEGIE GEOPHYSICAL LABORATORY. See GEOLOGY and MINERALOGY.

CARNEGIE INSTITUTE OF TECHNOLOGY. An institution for technical education founded in Pittsburgh in 1909 by Andrew Carnegie. Previous to 1912 it was known as the Carnegie Technical School. The enrollment in the autumn of 1914 was 3285, and the faculty numbered 202. The institute consists of four separate schools, each with its own faculty, buildings, and student body. These are the School of Applied Science, the School of Applied Design, the School of Applied Industries, and the Margaret Morrison School for Women. The four schools offer night courses in practically the same subjects as are given in the day courses. There were no notable changes in the faculty during the year. The only noteworthy benefaction received during the year was a gift of $2,000,000 from Mr. Carnegie. The amount of productive funds amounts to $8,000,000, and the present income to $530,746. The library contains 350,000 volumes, and the students have the privilege of using the Carnegie Library of Pittsburgh. The director is A. A. Hammerschlag.

CARNEGIE INSTITUTION OF WASHINGTON. A summary is given below of the important work carried on in 1914 in the several departments of the institution.

DEPARTMENT OF BOTANICAL RESEARCH. The greater part of the work of this department is carried on in its principal laboratory at Tucson, Ariz. Relating to it, however, comprehensive studies of desert plant life in many parts of the globe are undertaken. A study was made during the year of several desert basins in the Western States similar in general characteristics to the Salton Sea. In addition to the work carried on by members of the departmental staff, various investigations were pursued by about 20 collaborators, several of whom were temporary residents at the Desert Laboratory. The facilities of this laboratory were enlarged during the year by the completion and equipment of a specially designed small building for studies in photo-chemistry.

DEPARTMENT OF ECONOMICS AND SOCIOLOGY. The work of this department has been confined in recent years to the preparation of divisional monographs. Dr. Victor S. Clark, in charge of the division of manufactures, has devoted his time exclusively to this work. Of the comprehensive "Index of Economic Material in the Documents of the States" projected by the department and prepared under the direction of

Miss A. R. Hasse, the volume for New Jersey was in press at the end of the year. The volumes of this index for eleven different States have already been issued.

Department of Experimental Evolution. The observational, statistical, and physical methods applied by this department are constantly adding to the sum of facts and of inductions essential to advances in biological knowledge. During the past year observations and experiments were made on mucors, plants, pigeons, poultry, and seeds, while the director continued his statistical studies in the relatively new field of departures from normality in mankind. Among the most important researches of the year are those of the director in human heredity, those of Dr. Blakeslee and Dr. Gortner on mucors, those of Dr. Riddle on the Whitman pigeons, those of Dr. Harris on the characteristics of seeds, and those in cytology by Mr. Metz. Dr. R. A. Gortner resigned during the year to accept a position in the University of Minnesota.

Geophysical Laboratory. In less than a decade this establishment has not only accomplished the formidable task of constructing the necessary apparatus and of preparing many of the pure minerals concerned, but has already begun the processes of analysis and synthesis which are leading to extensive additions to our knowledge of rock and mineral formations found in the earth's crust. This department published during the year 48 papers, many of them in German as well as in English. See Chemistry.

Department of Historical Research. Investigations of this department have proceeded effectively during the year. In addition to the members of the permanent staff, several collaborators took part in these investigations, which required explorations of historical archives in England, Scotland, France, Spain, Holland, Russia, and Switzerland. There were published during the year *Guide to the Materials for American History to 1783, in the Public Record Office of Great Britain*, and *Guide to the Materials in London Archives for the History of the United States Since 1783.* Work on the preparation of a similar guide to the data on American history in the archives and libraries of Paris was interrupted by the war. Work in Holland was also suspended, but researches in Great Britain and Russia suffered little interruption. Progress was made on the projected *Atlas of the Historical Geography of the United States.*

Department of Marine Biology. In accordance with plans approved by the Trustees in 1912, an expedition to Torres Straits, Australia, was undertaken in the latter part of 1913, where observations and examinations in the geological formation of Thursday Island and other islands were undertaken. On returning to America the director was engaged during April and May of 1914 in two minor expeditions with the departmental vessel *Anton Dohrn*. These researches were carried on along the Florida Keys.

Department of Meridian Astrometry. The activities of this department are concentrated on the derivation of stellar positions for the comprehensive catalogue in preparation, on supplementary measurements of stellar coördinates with the meridian circle of the Dudley Observatory, and on investigations of residual stellar motions. Researches were also carried on on the problems of star-drift, including the speed and direction of motion of our solar system. A catalogue on stars is progressing favorably.

Nutrition Laboratory. Favorable results have followed the location of the Nutrition Laboratory in Boston near the Harvard Medical School. Several improvements were made in the laboratory during the year and a number of additions to equipment were installed. These latter include new respiration apparatus for studies of metabolism in muscular work of men and of small animals, a reconstruction of an earlier form of bed calorimeter, and additional apparatus for photo-electric registration of physiological action in subjects under observation, whether near by or at a distance.

Department of Terrestrial Magnetism. The extensive operations of this department on the oceans and in foreign countries were supplemented during the year by the new departmental laboratory, whose completion and occupation took place nearly simultaneously with the beginning of the second decade of the department's existence. This laboratory and its site provide greatly enlarged facilities for research as well as unsurpassed quarters for the resident departmental staff. The nonmagnetic ship *Carnegie* on June 18, 1914, left for a cruise in the North Atlantic. In this, the third of her longer expeditions, she traversed about 10,000 miles. At the end of the year she was refitting for a longer cruise during 1915–16 in southern latitudes.

Solar Observatory. At the end of the year the Mount Wilson Solar Observatory completed a first decade of its history. Progress in the construction of the 100-inch telescope was made during the year and many additions and improvements in the apparatus already installed at the observatory were made. The principal results of the work are noted in the article Astronomy.

During the year the Institution lost two members of its Board of Trustees,—Silas Weir Mitchell (q.v.) and John Lambert Cadwalader (q.v.). At the annual meeting of the Board of Trustees on December 11, Dr. Simon Flexner resigned as trustee and the following new members were elected: Honorable Charles Payne Fenner, Honorable Henry Cabot Lodge, Mr. George Wharton Pepper, and Dr. Theobald Smith. At this meeting a Department of Embryology was established under the direction of Professor Franklin P. Mall of the Johns Hopkins Medical School. The president of the Institution is Robert S. Woodward.

CARNIOLA. See Austria-Hungary.

CAROLINE ISLANDS. A group of islands off the north coast of New Guinea. The islands were ceded in 1899 by Spain to Germany, and became administratively a part of the German New Guinea Protectorate. Area of main islands, 307 square miles; population (1911), 55,000.

CARR, Camillo Cassatti Cadmus. An American soldier, died July 24, 1914. He was born in Harrisonburg, Va., in 1842. He entered the University of Chicago in 1859, but left in his senior year before graduation to enlist in the army. He served as a private in 1862–3, in the latter year was made second lieutenant, and in 1864 first lieutenant. He was wounded in the battles of Todd's Tavern, and Cedar Creek, Va. In 1864 he was promoted to be captain. After the Civil War he was engaged in service against the Indians and took part in the Apache campaigns in Arizona from 1867 to 1882. In all he spent over twenty years campaigning in the Indian country. From 1885 to 1894 he was cavalry instructor in the United States Infantry and Cavalry School at Fort Leavenworth, Kan. In the following year he served as inspector-general of the Department of Columbia, and in 1898–9 was in command of the western part of Porto Rico. He became lieutenant-colonel, commanding the Fifth Cavalry, in 1898. In 1900–01 he commanded a regiment in the Philippine Islands. He was in charge of the Department of Missouri in 1904, and the Department of Dakota from 1904 to 1906. He was retired by operation of law with the rank of brigadier-general in 1906. He was a member of several patriotic societies. He translated from the French of Gen. F. de Brack, *Cavalry Outpost Duties*, and was a frequent contributor to military journals.

CARRANZA, VENUSTIANO. See MEXICO, *History*.

CARSON, SIR EDWARD. See GREAT BRITAIN, *History, passim*.

CASTELNAU, CURIÈRES DE. See WAR OF THE NATIONS.

CATHOLIC UNIVERSITY OF AMERICA. An institution of higher learning under the auspices of the Roman Catholic Church, founded in Washington, D. C., in 1887. The students enrolled in the several departments in the autumn of 1914 numbered 700, with a faculty numbering 75. The university received during the year a gift of $500,000 from the Knights of Columbus, and the same amount from the Theodore B. Barselin estate. There were no notable changes in the faculty during the year. The total endowment of the university amounted on June 30, 1914, to $2,721,277, and the total income to $315,350. The library contains about 80,000 volumes. The rector is Rt. Rev. Thomas J. Shahan.

CATSKILL AQUEDUCT. See AQUEDUCTS.

CATTERALL, RALPH CHARLES HENRY. An American historian and educator, died Aug. 2, 1914. He was born in Bolton, England, in 1866, and came with his parents to the United States in 1869. He graduated from Bucknell University in 1891, and from Harvard in the following year. He took post-graduate studies at the University of Chicago, receiving the degree of Ph.D. in 1902. From 1894 to 1902 he was instructor in history at the University of Chicago. In the latter year he became assistant professor of history in Cornell University, serving in that chair until 1905, when he was appointed professor of modern history. He retained this position until his death. He was the author of *The Second Bank of the United States* (1902).

CATTLE. See DAIRYING and STOCK RAISING.

CATTLE TICK. See VETERINARY MEDICINE.

CAVALRY. See MILITARY PROGRESS.

CAWEIN, MADISON JULIUS. An American poet, died Dec. 9, 1914. He was born in Louisville, Ky., in 1865, and received a high school education. Mr. Cawein began writing when he was still a young man and he received early recognition as one of the most gifted and musical of American poets. Some of his lyrics and poems on nature are especially beautiful. His verses appeared in magazines and periodicals in the United States and England. He was a prolific writer and his published volumes include: *Blooms of the Berry* (1887); *The Triumph of Music* (1888); *Red Leaves and Roses* (1893); *Poems of Nature and Love* (1893); *The Garden of Dreams* (1896); *Weeds of the Wall* (1901); *A Voice on the Wind* (1902); *Nature-Notes and Impressions* (prose and verse, 1906); *An Ode, in Commemoration of the Founding of the Massachusetts Bay Colony* (1908); *New Poems* (1909); *The Giant and the Star* (1909); *Minions of the Moon* (1913); *The Poet and Nature and the Morning Road* (1914). He wrote also *The Shadow Garden and Three Other Plays* (1910). In addition his *Poems, Selected by the Author, with Foreword by William Dean Howells*, was published in 1913. He was a member of the National Institute of Arts and Letters.

CAYENNE. See FRENCH GUIANA.

CELEBRATIONS. There were three great commemorative celebrations in the United States during the year, as follows: the Lake Champlain Centenary in Plattsburg, N. Y., the Star Spangled Banner Centenary in Baltimore, Md., and the Commercial Tercentenary Celebration in New York City.

LAKE CHAMPLAIN CENTENARY. This had for its purpose the commemoration of the hundredth anniversary of the battle of Lake Champlain on Sept. 11, 1814, when Com. Thomas Macdonough, with a fleet of 14 vessels carrying 86 guns and 850 men, completely defeated a British fleet of 16 vessels, carrying 96 guns and about 1000 men under the command of Capt. George Downie. A Plattsburg Centenary Commission, of which Francis Lynde Stetson was made chairman, was created by the New York Legislature and $125,000 was appropriated while Congress contributed a like amount. The exercises began on September 6, continued until September 12, and included, besides religious services and addresses, several historical pageants.

STAR SPANGLED BANNER CENTENNIAL. In Baltimore, Md., during the week of September 6, was held a centennial celebration in honor of the battle of North Point which occurred on Sept. 11, 1814, when Gen. John Stricker with 1700 men repulsed a superior land force under Sir Robert Ross (aided by a naval contingent under Admiral George Cockburn); and also in memory of the writing of the Star Spangled Banner by Francis Scott Key on September 13 (in recognition of the heroic defense of Fort McHenry against the British). The National Star Spangled Banner Centennial Commission was incorporated on Nov. 3, 1913, with James H. Preston as president, and for the expenses of the celebration Baltimore contributed $50,000, Maryland, $75,000, and the citizens of Baltimore $40,000. The exercises began on Sunday (September 6), with services in the churches, "Patriotism" being selected as the theme for the addresses, a public concert in the afternoon, and general illumination of the city in the evening. Monday (Labor Day) was given up to a large civic and industrial parade in which there were numerous floats, showing typical industries. The *Constellation*, the oldest used vessel in the U. S. navy, arrived, escorted by United States and foreign warships. Tuesday was devoted to a floral automobile parade, colonial lawn fêtes, and a grand carnival in the evening. Wednesday was celebrated by a parade of national orders with allegorical floats, and the unveiling of four tablets on historic buildings in Baltimore. Thursday's programme included the unveiling of tablets commemorative of historic events, notably one on Fort McHenry; and also an electrical historic pageant with 24 floats illustrative of incidents and events of the War of 1812, the battle of North Point, and historical happenings leading to the dawn of the morning when Key wrote his immortal poem. On Friday was given a parade of the army and navy, State and visiting militia and military organizations, while in the evening there was a military ball in honor of the visiting military and other distinguished guests. Saturday was designated as "Star Spangled Day" and was celebrated by the dedication of Fort McHenry as a public park, with an address by Secretary Bryan representing President Wilson; the singing of Key's anthem by 6000 school children forming a human flag, and the unveiling of a statue of Maj. George Armistead; while in the evening there was a grand banquet and elaborate fireworks. Throughout the week Baltimore was specially illuminated each evening; and band concerts, historical exhibitions and other entertainments were held. Consult *Official Programme and the Story of Baltimore*, 165 pp. (Baltimore, 1914).

New York Commercial Tercentenary. This celebration was organized to commemorate the granting on March 27, 1614, of a general charter by the States General of the United Netherlands, promising to give an exclusive charter for four voyages to any Dutchman who should discover new passages, havens, countries, or places good for trading. During the summer of that year, certain merchants of Amsterdam and Hoorn sent out five ships to New Netherland, and upon making report to the States General of their discoveries, were granted, on Oct. 11, 1614, the exclusive privilege of trading to this region for four voyages. This was the beginning of the regularly chartered commerce of New York. After this trading had continued 10 years, the Dutch made a permanent settlement in 1624 at what is now Albany, and in 1626 New Amsterdam was permanently settled on Manhattan Island.

In December, 1912, Mayor Gaynor of New York City appointed a citizens' committee to arrange for the suitable observance of the completion of three centuries of American commerce, which committee was subsequently enlarged and became incorporated as the New York Commercial Tercentenary Commission, of which Gen. Howard Carroll became president. The celebration began on March 27 and continued until November 21. The first event was on March 27 at Fort Wadsworth, Staten Island, when tableaux representing the beginning of trading with the Indians were presented, the participants being New York State Indians and descendants of old Dutch families of New York. In the evening a public meeting was held at which addresses were made by Mayor Mitchell of New York and Mayor Stevens of Albany. On August 12 a local festival was held at New Brighton, Staten Island, at which historical tableaux were produced and folk dances and songs of all nations were rendered by school children. On August 18 a local festival was given in Brooklyn which included athletics, drills, dancing, and historical scenes enacted in costume, the latter commemorating particularly events in the history of Brooklyn. On August 19 a local festival was given in Bronx Borough with tableaux and dances illustrating the Indian, Dutch, English Colonial, and modern periods. On August 29 another local festival was given in Central Park, New York City, and consisted of a pageant of Manhattan. Ten floats represented the Indian Period, Dutch Period, Early Education, Education of To-day, Recreation, Tribute of the Nations, Industrial Education, Cog Wheel, Band Box, Commerce and Horn of Plenty. On Saturday, October 24, the Jewish congregations, and on Sunday, October 25, the Christian churches were requested to observe the day with special recognition of "God in History." On October 28, an automobile pageant parade was held in the evening, followed by a reception to Governor Glynn and Mayor Mitchell, honorary presidents of the Commission. On October 29 there was a reception at the Metropolitan Museum of Art. On October 31 historic cannon were dedicated in Battery Park and later a Harlem Pageant was given; while in the evening a Commercial Pageant consisting of historical, educational, commercial, industrial, and symbolical floats, patriotic bodies, and other interesting features paraded. From November 7 to 21 there was held in the Grand Central Palace a series of exhibits representing Old New York and Modern New York, with displays by merchants and manufacturers showing the development of the commerce and industry of the city and State as well as the country at large. An exhibition of the life, industries, and arts of the American Indians, with illustrated lectures, was a feature of the Commercial Exhibits. In addition there were public musical festivals given in the various boroughs of New York City on October 27, 29, and 30, and daily during November 1–6. During the week beginning October 26, many of the leading thoroughfares were illuminated and adorned by strings of incandescent lights and pennants on either side.

The programmes of these three historical celebrations have been given in some detail, as they show the most recent development of celebrations in which the money is spent so that the people may enjoy the spectacular features without cost to themselves, while the historical features are by no means neglected. The most valuable incident of the Star Spangled Banner Celebration in Baltimore was that upward of 20 historical sites were permanently marked by artistic tablets or memorial statues.

Peace Celebration. (Consult New International Year Book, 1913, p. 237.) Owing to the war in Europe the programme of the American Peace Centenary Committee has been postponed until hostilities shall have ceased. In the meanwhile however, strong committees (nearly a hundred in number), have been organized in all of the larger cities of the United States and also in Great Britain, Canada, Newfoundland, and elsewhere throughout the British Empire. Among the things already accomplished may be mentioned the purchase in England of Sulgrave Manor in Northamptonshire, the ancestral home of George Washington; and the publication of a *Historical Review of the Century of Peace* by William A. Dunning. Among the projects that have been started are, a statue of Lord Chatham to be presented to the United States; a replica of the statue of

Lincoln by St. Gaudens to be presented to Great Britain; a statue of Francis Parkman to be presented to Canada; the erection in the city of Washington of a memorial in commemoration of the motherhood and womanhod of the Anglo-Saxon-Celt-Teutonic world, to be known as the Queen Victoria Memorial; and a great peace memorial to be placed on a peak of the Rocky Mountains.

CELLI, ANGELO. An Italian scientist, died at Rome in May, 1914. He was born in 1857, and after completing his medical education was appointed at a comparatively early age professor of hygiene at the University of Palermo. A year afterward he became professor of hygiene in the medical faculty of the University of Rome, where he remained until his death. He was later appointed Chief of the National Board of Health and became a Senator. As a teacher, investigator, and promoter of social legislation his work was important. The organized efforts for the suppression of malaria, and the sanitary improvement of the Campagna region, were mainly due to his work. His activity covered a wide field, including researches on the parasites which cause malaria, on cerebrospinal meningitis, cholera, pellagra, dysentery, rabies, flies as transmitters of disease, and many other topics. He was foremost in bringing about the government monopoly of quinine and the sale of that drug practically at cost in every post office. At the World's Fair at St. Louis in 1904 he was one of the leading delegates to the International Congress of Arts and Sciences.

CELLOPHANE. See CHEMISTRY, INDUSTRIAL.

CELTIC PHILOLOGY. See PHILOLOGY, MODERN.

CEMENT. During 1914, the general business depression and slackening of building operations exerted a marked effect upon the cement industry, and before the outbreak of the European war cement mills were operating at but little more than 50 per cent of capacity. The business with South America, Asia, and Africa that confidently had been expected to result from hostilities in Europe failed to develop. It was said that complications concerning shipping and exchange acted to restrain the trade. Later in the year, the business remained at about the same level as during the spring months. The total quantity of Portland, natural, and puzzolan cement produced in the United States in 1913 was 92,949,102 barrels, valued at $93,001,169, as compared with 83,351,191 barrels, valued at $67,461,513 in 1912. Almost the entire product was Portland cement. This amounted to 92,097,131 barrels, valued at $92,557,617, which represents an increase of nearly 10,000,000 barrels over the production of 1912, and an increase in value of about $25,500,000. Pennsylvania produced by far the greatest amount in 1913, or 28,701,845 barrels. Indiana was second, with 10,872,574 barrels. California ranked third in the production; New York fourth; Illinois fifth. These States all produced an excess of 5,000,000 barrels. There were producing plants in twenty-five States in 1913. The apparent consumption of Portland cement in 1913 was 85,809,649 barrels. The industry has shown great progress. In 1900 the total production was 8,482,020 barrels. One of the most important uses of cement at the present time is in the construction of concrete roads. The imports of cement into the United States in 1913 was approximately 84,630 barrels, valued at $138,187. There has been a continuous decline in the imports of foreign cement for several years. The total quantity exported in 1913 was 2,964,358 barrels, valued at $4,270,666. Most of this was Portland cement.

The natural cement produced in the United States in 1913 amounted to 744,658 barrels, valued at $345,889. This was a considerable decrease from the production of 1912. Natural cement was produced in 1913 in thirteen plants distributed in eight States. New York is first in the production of natural cement. Puzzolan was manufactured during 1913 at three plants, respectively in Alabama, Pennsylvania, and New York. The total output was 108,313 barrels, valued at $97,663.

Production of Portland cement during 1914 in the United States was estimated by the United States Geological Survey at 88,514,000 barrels, a decrease of 3.8 per cent from the output of the previous year. Estimated shipments during 1914 were 86,715,000 barrels, a decrease of 2.2 per cent from the figures of 1913. While the Lehigh, Illinois, Indiana, and Pacific Coast districts reported decreases of both production and shipments of from 9 to 12 per cent, encouraging increases were shown in the New York, Maryland-Virginia, Iowa-Missouri, and Rocky Mountain districts during 1914. See CONCRETE.

CENTENARIES. See CELEBRATIONS and EXPOSITIONS.

CENTRAL AMERICA. See articles on Central American Countries.

CEROLIN. This new preparation consists of the glycerides of fatty acids together with cholesterins, lecithin, and ethereal oil, all of which are found in yeast, of which cerolin is claimed to be the active constituent. Recent investigations indicated that the laxative action of yeast depends on its fatty and lipoid constituents, rather than the ferments. Cerolin was said to be useful in boils, acne, and other purulent affections of the skin. It was also said to benefit cases of habitual constipation, leucorrhea, erosions of the cervix and similar affections. The substance is a neutral honey-like semifluid mass of a yellowish to brownish color and has the odor of yeast. It is prepared by extracting fresh purified beer yeast with alcohol and separating the dissolved fat from the alcoholic extract by suitable means.

CEYLON. An island in the Indian Ocean, lying south of India; a British crown colony. Capital, Colombo.

AREA AND POPULATION. The total area of the island is 25,332 sq. miles. The population, March 10, 1911, numbered 4,110,367, an increase of 14.9 per cent over the population as enumerated in 1901. The Sinhalese numbered 2,715,686; the Tamils, 1,060,167; Burghers and Eurasians, 26,673; Moors, 267,054; Malays, 12,992; Europeans, 8524; others, 19,271. The population was divided acording to religion as follows: 2,474,393 Buddhists, 939,701 Hindus, 284,482 Mohammedans, 410,525 Christians, and 1266 others. The Indian coolies on the tea estates number about 440,000; they are not indentured. Including coolies born and settled in Ceylon, the total number of plantation laborers is estimated at 510,000. The principal towns with their population in 1911 follow: Colombo, 213,396;

Negombo, 13,152; Moratuwa, 27,253; Kalutara, 13,006; Kandy, 30,148; Jaffna, 40,539; Galle, 40,187; Matara, 13,851; Batticaloa, 10,715; Trincomalee, 9086; Kurunegala, 8163; Badulla, 6488.

EDUCATION. The total number of scholars in government schools at the end of 1912 was 104,049, in government-aided schools, 221,233, and in unaided schools, 34,375. In 1868, the total number of scholars in all schools was 6897. Government expenditure in 1912, Rs. 1,707,218. Vernacular instruction is free, and all government schools are nonsectarian. There are industrial, technical, medical, and normal schools.

PRODUCTION. About one-quarter of the total land area is under cultivation as follows: 942,621 acres under coconut palms; 660,574 under rice; 580,845 under tea; 101,706 under grains other than rice; 215,000 under rubber; 47,292 under cinnamon; 43,358 under cacao; 16,241 under tobacco; 1512 under coffee; and 263 under cinchona. The development of the rubber industry is shown by the fact that in 1898 only 750 acres were planted to rubber; in 1901, 2500; in 1904, 11,000; in 1905, 40,000; in 1906, 100,000; in 1910, 186,634; and in 1911, 215,000.

The export of tea in 1912 was 192,019,591 pounds; in 1911, 186,594,055 pounds; in 1900, 149,264,602 pounds; in 1890, 45,799,518. Coconut-palm products, exported in 1912 were valued at Rs. 32,435,862; cinnamon, Rs. 2,835,591; cacao, Rs. 2,718,041.

Plumbago mines and pits in the island number 449, with an estimated total yield of 654,650 cwts. in 1912, valued at over Rs. 8,346,787. Gem quarries number 1986. The government has resumed possession of the Manaar pearl banks. Salt is a government monopoly. Native industries are gold, silver, ivory, and tortoise-shell work, pottery-making, wood-carving, etc.

The live stock in 1907 numbered 1,559,271 cattle, 98,746 sheep, 179,123 goats, 3985 horses, and 96,305 swine.

COMMERCE. The total value of all imports for the calendar year 1912 was Rs. 181,999,991; in 1911, Rs. 164,405,788; 1910, Rs. 163,520,076; 1909, Rs. 133,782,127; 1903, Rs. 116,259,636. The chief imports are rice from India, valued at Rs. 46,867,538 in 1912, and textiles and coal from the United Kingdom. The total value of all exports for the calendar year 1912 was Rs. 198,954,902; 1911, Rs. 182,028,968; 1910, Rs. 166,569,107; 1909, Rs. 146,899,631; 1903, Rs. 108,764,335. The total customs revenue in 1912 was Rs. 13,393,672. Imports and exports to and from the United Kingdom in 1912 were valued at Rs. 50,999,044 and Rs. 97,756,191 respectively; in 1911, Rs. 43,443,786 and Rs. 87,359,604. Total tonnage entered and cleared during 1912, 15,420,142, of which 10,114,485 tons British; during 1911, 14,926,764, of which 9,571,159 tons British.

COMMUNICATIONS. All railway lines are owned and worked by the government. Broad-gauge lines extend from Colombo to Bandarawela, 160¾ miles; from Polgahawela to Kankesanturai, 212¼ miles; Peradeniya Junction to Kandy and Matale, 21 miles; Ragama Junction to Mahara Quarry, 1½ miles; Colombo to Matara, 98½ miles; Ragama to Negombo, 14½ miles; Fort Junction to Wharf, 1¼ miles. Narrow-gauge lines connect Colombo with Yatiyantota, 47¾ miles; Avisawella with Ratnapura, 27 miles; Nanu Oya with Ragalla, 19¼ miles. Total railway mileage, 604⅝ miles. The total cost of construction to June 30, 1912, was Rs. 102,367,082. Revenue for the year ended June 30, 1912, Rs. 14,113,877; expenditure, Rs. 6,337,583.

There are broad-gauge lines under construction from Madawachchi to Talaimannar, 66 miles; Negombo to Chilaw, 27 miles; Bandarawela to Badulla, 21 miles. A narrow-gauge line is projected from Ratnapura to Kahawatte (for Pelmadulla), 17 miles. There is a plan for an embankment along the islets and shoals of "Adams Bridge," for uniting the railway systems of India and Ceylon; which, on completion of the Manaar extension, will be brought within twenty miles of each other.

Ceylon is in direct telegraphic communication with India, and thence with Europe and the East. There are internal telegraph and telephone systems.

FINANCE AND GOVERNMENT. The unit of value is the rupee, worth 33.44 cents. The revenue is derived mainly from customs duties, land sales, licenses, salt, stamps, and railway receipts. Salt is a government monopoly, and the revenue from its sale for the calendar year 1912 was Rs. 1,522,542. The total revenue for the calendar year 1912 was Rs. 50,156,329; for the fiscal year 1911–12, Rs. 47,264,222; for the calendar year 1910, Rs. 43,741,758. Expenditure, 1912, Rs. 49,277,370; 1911–12, Rs. 48,643,687; 1910, Rs. 36,467,708. The public debt stood Dec. 31, 1912, at Rs. 91,960,909.

The colony is administered by a Governor (Sir Robert Chalmers in 1914), aided by an Executive Council of six members and a Legislative Council of twenty-one members.

The Maldive Archipelago, 400 miles to the westward, is tributary to Ceylon. There are 17 groups, with about 72,200 inhabitants.

CÉZANNE. See PAINTING AND SCULPTURE.

CHAFFEE, ADNA ROMANZA. An American soldier, died Nov. 1, 1914. He was born in Orwell, Ohio, in 1842, and was educated at the public schools. At the outbreak of the Civil War he enlisted as a private in the Sixth United States Cavalry; served throughout the war and at its close had risen to the rank of first lieutenant in the regular army, with a brevet of captain for gallant services. He remained in the military service after the close of the war and took part in many campaigns against the Indians. He was promoted to be a major in 1885, lieutenant-colonel in 1897, brigadier-general in 1898, and major-general in July of the same year. In the Spanish-American War he commanded the third brigade in the Second Division of the Fifth Army Corps. From 1898 to 1900 he was chief of staff of the Division of Cuba. He commanded the China relief expedition in 1900–01, and in 1901–02 commanded the Division of the Philippines. He was commander of the Department of the East in 1902–03, and was assistant to the chief of staff in 1903–04. From 1904 to 1906 he was chief of staff of the United States Army. After over forty years of service he was retired at his own request with the rank of lieutenant-general, in 1906. General Chaffee was one of the finest examples of the officers who rose from private to the highest rank. Although he was a stern disciplinarian, he never demanded of others what he hesitated to do himself, and superiors and subordinates united in praise of the earnest, tireless way in which he accomplished every task that was set for him to do.

CHAMBERLAIN, ALEXANDER FRANCIS. An American anthropologist and educator, died April 9, 1914. He was born at Kenninghall, England, in 1865, and graduated from Toronto University in 1886. He took post-graduate studies at that university and at Clark University, receiving the degree of Ph.D. from the latter in 1892. Until his death he was professor of anthropology at Clark University. From 1900 to 1908 he was editor of the *Journal of American Folk-Lore,* and was department editor of the *American Anthropologist.* He was a member of many American and foreign anthropological societies and made special investigations of the Kootenay (British Columbia) Indians under the auspices of the British Association in 1891. From 1904 to 1905 he was chairman of the Democratic City Commission of Worcester, and in the latter year he was Alderman-at-large of the city of Worcester. His published writings include: *Child and Childhood in Folk Thought* (1896); *The Child—A Study in the Evolution of Man* (1900); *Poems* (1904). He also published many essays and papers on anthropological and other subjects, and contributed to the NEW INTERNATIONAL ENCYCLOPÆDIA and other works of reference.

CHAMBERLAIN, JOSEPH. An English statesman, died July 4, 1914. He was born in London in 1836, the eldest son of Joseph Chamberlain. More than 100 years before his birth his ancestors had carried on an extensive business as leather merchants and shoe manufacturers in Cheapside, London, and Chamberlain's father planned for him a mercantile career. He was sent to a school by his parents, but at the age of sixteen left to enter upon the business of screw manufacturing in which his father was also interested. The business was prosperous, but not highly remunerative. Shortly after his connection with the business he invented a screw with a point so sharp that it could be driven into the board without a hole having been previously made for its insertion. This improvement resulted in such an increase in the business that at the age of thirty-eight Joseph Chamberlain was able to retire and to devote himself to his real interest, that of politics. He had in the meantime removed to Birmingham, which from that time on remained his residence. In 1870 he became a member of the first Birmingham School Board, and in 1873 was elected mayor of the city. He was twice reëlected. The city government of Birmingham was at this time at a low ebb of civic morality, but Chamberlain made it famous among the cities of the world as a well-governed municipality. The slums were wiped out and a boulevard was constructed over the place where they had stood. One of the chief reforms which he put through as mayor was the securing of legislation which led to the city's ownership and management of the local water works and gas works. The plan was highly successful and the cost of gas to the public was reduced. He became widely known as a Radical, and his chief strength at this time was with the common people of Birmingham, with whom he was immensely popular. His first attempt to enter Parliament was unsuccessful, but his forceful speeches attracted the attention of John Morley, who invited him to contribute to the *Fortnightly Review.* His papers in this journal were sensational. They attacked bitterly the conservatism of Mr. Gladstone and the Manchester school of politics. Mr. Gladstone's offer in 1874 to abolish the income tax was met by a cynical attack by Chamberlain. Gladstone was openly accused of trying to perpetrate a fraud on the working classes by offering in return for votes relief from their burdens. Chamberlain was finally elected to Parliament in 1876, and he had the advantage of a reputation already established. His first speech, delivered a few weeks after he took his seat, caused a stir. As a result of his contribution to the victory of the Liberals in 1880 he was given a seat in the Cabinet with the presidency of the Board of Trade. Up to 1885 he was the only Radical in a Liberal Cabinet. In the election of 1885 the office of First Lord of the Admiralty was offered to him, but he declined it in order to go back to the presidency of the Board of Trade. He hesitated, however, about joining this Cabinet in any post, replying to Mr. Gladstone's invitation that he would not be a party to any scheme for a separate Parliament in Dublin. He finally consented to accept upon the understanding that he should be free to resign if the Irish measure put forward by the Government should be one of which he felt he could not approve. When the Irish bill was completed Chamberlain, exercising this right, resigned, and was followed by Lord Hartington, John Bright, and others. The Ministry fell, and Mr. Chamberlain was the subject of a storm of abuse for what his enemies called his "treachery." He then threw his strength on the side of the Conservative element and formed the Liberal Unionist party, to which Mr. Gladstone owed his defeat. He was sent to the United States on a diplomatic mission in connection with the fisheries dispute between the United States and Canada, and from 1895 to 1903 served as Secretary of State for the Colonies. One of the most notable features of his official life was his share in the conduct of the Boer War and his mission to South Africa to reconcile the Boers to England. In 1903 he launched at Birmingham his scheme for the revision of the fiscal policy of the country and the adoption of a policy of "preferential tariffs." In September of that year, believing such a policy to be at variance with the wishes of the majority of the various constituencies, he resigned from the Ministry in order to devote himself to explaining and popularizing his proposal. Shortly after his resignation, however, his health and powers of mind began to fail, and he was obliged to take a trip to the Continent for his health. His last appearance in the House of Commons occurred on Feb. 16, 1910. He was then in his seventy-fourth year and in such feeble physical condition that he was unable to sign his name in the book of members. Mr. Chamberlain was one of the most commanding personalities of his time. It is frequently said of him that he had more American characteristics than English. He had great capacity for leadership and was equally effective as a legislator, administrator, orator, and debater. In 1888 he married Mary Endicott, the daughter of William C. Endicott, at one time Secretary of War in the Cabinet of President Cleveland. Mr Chamberlain was chancellor of the University of Birmingham in 1901, and was at one time Lord Rector of Glasgow University.

CHAMBERLAIN, JOSHUA LAWRENCE. An American soldier and educator, died Feb. 24, 1914. He was born in Brewer, Me., in 1828, and graduated from Bowdoin College in 1852. In 1862 he was commissioned lieutenant-colonel of the Twentieth Maine Infantry and later became its colonel. This regiment took a prominent part in the Battle of Gettysburg, and General Chamberlain received the Congressional Medal of Honor for "daring heroism" in holding the position of Little Round Top and carrying Great Round Top. After this battle he commanded a brigade of the fifth army corps. In 1864 he was promoted brigadier-general by General Grant "for meritorious and efficient services in battle and especially gallant conduct in leading his brigade against the enemy in the assault on Petersburg." This is said to be the only promotion made by General Grant on the field of battle. He was brevetted major-general on March 29, 1865, for "conspicuous gallantry in action," and was appointed to command the parade at the formal surrender of Lee's army at Appomattox in April of that year. Up to the close of the war he commanded the first division of the fifth corps. After the war he declined a colonelcy in the regular army and was honorably discharged on Jan. 15, 1866. During his services he was three times wounded, once almost mortally. From 1861 to 1871 he was Governor of Maine and was major-general of the militia of the State from 1879 to 1880. From 1871 to 1883 he was president of Bowdoin College, and from 1874 to 1879 was also professor of mental and moral philosophy in that college. He was lecturer on political science and public law at Bowdoin from 1883 to 1885. In 1878 he was United States Commissioner at the Paris Exposition, and in 1884 was president of the Society of the Army of the Potomac. He was also an official or member in many other patriotic, literary, and scientific societies. He delivered many orations at the dedication of monuments, commemorating the Civil War, and also lectured on Civil War subjects, notably on the Battle of Gettysburg. His published writings include: *Maine, Her Place and History* (1876); *American Ideals* (1890); *Ethics and Politics of the Spanish-American War* (1898); *The New Nation* (1899); *De Monts and Acadia* (1904); *Ruling Powers in History* (1905). He also contributed articles to several encyclopædias. From 1900 to the time of his death he was surveyor of customs at the port of Portland, Me.

CHAPARRO. See DYSENTERY.

CHARITIES. Recent years have seen an unprecedented expansion of the scope, purposes, and financial resources of charitable and philanthropic organizations in the United States and Europe. While 1914 did not bring forth any startling financial gifts or endowments, nevertheless the money supplied to public and private charities and corrections in the United States was estimated at $500,000,000 for the year, four-fifths of which went to private volunteer activities. Following the devastation of Belgium there was in addition an outpouring of American wealth by private organizations, the Rockefeller Foundation, the American Red Cross, and the States. (See RED CROSS and RELIEF FOR WAR VICTIMS.) The great extent of unemployment in the winters of 1913–14 and 1914–15 also called for widespread emergency organizations and relief committees. (See UNEMPLOYMENT.) The reader should also consult the following articles: CHILD LABOR; EUGENICS; JUVENILE COURTS; LABOR; MINIMUM WAGE; OCCUPATIONAL DISEASES; OLD-AGE PENSIONS; PENSIONS FOR MOTHERS; PENOLOGY; PROSTITUTION; SOCIAL ECONOMICS; SOCIAL INSURANCE; WOMEN IN INDUSTRY; and WORKMEN'S COMPENSATION. In few of these references will matter bearing on charity as poor relief be found, but the tendency is now very strong for prevention to take precedence of mere temporary relief, and hence those movements aiming to establish a more just social and industrial system are related to constructive philanthropy. Much attention is given to the determination of causes of dependency and delinquency as a first scientific step toward their final elimination. There is also a tendency for public supervision and control to increase on the grounds that haphazard relief may do more harm than good; that system and efficiency require governmental regulation, and that the interests of the State are paramount. The scope, aims, and problems of modern charitable undertakings are sufficiently indicated by the accounts of certain conferences.

NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS. This met at Memphis, Tenn., for its 41st annual session, May 6–15, under the presidency of Professor Graham Taylor of the Chicago School of Civics and Philanthropy. At the same time there met in Memphis, the Southern Sociological Congress (see SOCIOLOGICAL CONGRESS, SOUTHERN); the National Probation Association (see PENOLOGY); the National Conference on Education of Backward, Truant, Delinquent, and Dependent Children; the American National Red Cross, and certain societies described below. It was determined to hold the 1915 Conference at Baltimore, May 12–19, with Mrs. Mary Willcox Glenn as president. The following committees for 1915 were created with chairman as indicated: *Children,* C. C. Carstens of Massachusetts; *Corrections,* J. T. Gilmore of Toronto; *Public and Private Charities,* George S. Wilson, District of Columbia; *Family and Community,* R. M. Little, Pennsylvania; *State Care of Insane,* Dr. Walter E. Fernald of Massachusetts; *Education for Social Work,* Porter R. Lee of New York; *Health,* Dr. Richard C. Cabot of Massachusetts; *Social Legislation,* Professor Henry R. Seager of Columbia University; and *Social Hygiene,* Martha P. Falconer of Pennsylvania. Each of the main topics has several associated topics included with it. After much discussion in which considerable dissatisfaction with the method of selecting officers was shown, the president was authorized to appoint a committee to report at the next Conference, means of giving members a larger voice in such selections. Another committee was appointed to consider the advisability of changing the name to the National Conference of Social Betterment Agencies.

The 1914 conference had sessions on children; family and community; neighborhood; corrections (see PENOLOGY); defectives; standards of living and labor; public charities; social hygiene (see PROSTITUTION); and public health. President Taylor devoted his address to the problems of the country as a political and social unit. He found the inefficiency of county administration in the indifference of voters, the sway of partisan politics, the neglect of legislatures, the confusion and neglect of various governmental agencies, and the lack of coöperation. He urged the necessity of humanizing politics, encouraging volunteer coöperation, and especially rehabilitating and revitalizing the country church.

In the session on Children, Dr. Francis Bradley of Atlanta recommended children's health conferences in connection with schools, charities and other organizations, as invaluable means of treating child hygiene. Mr. C. C. Carstens of Boston pointed out that the social and moral conditions of small towns and villages are often deplorable and hence social agencies must prepare to meet the special needs of the rural child. A paper on rescue agencies showed that these no longer seek merely to extricate the child from bad home conditions, but to elevate the entire home. Standards of efficiency in the care of children in institutions, in boarding houses, in free family houses, were discussed by several speakers. Opinion favored the boarding home, as opposed to the common practice of placing out all sorts of children in free homes in distant States where supervision is difficult. Roger N. Baldwin of St. Louis advocated a model children's code to include: establishment of eugenic conditions of birth; regulation of employment of mothers before and after child-birth; reporting of births; regulation of midwifery; relief of poor mothers; support of illegal children by fathers; compulsory education laws and a state-wide educational system; comprehensive juvenile court system; relief of destitute children; supervision of child-caring agencies. The conservation of child-life by the promotion of hygiene, prevention of child labor, extension of school opportunities, and in the South by the organization of more social centres with teacher, preacher, and visiting nurse, was advocated.

The section on Family and Community considered charity organization work, the improvement of rural life, and the relation of business to philanthropy. Many phases of family rehabilitation were considered. One of several speakers on rural life was Booker T. Washington, who declared that seven million out of nine million southern negroes are on farms; they own twenty million acres, worth nearly one-half million dollars. The most important helps are better housing, regularity of pay, better schools, more police protection, methods to increase efficiency, and abstinence from liquor.

The section on Neighborhoods emphasized the large place recreation should occupy in country life, not merely as means of enjoyment, but as means of self-development, and increase of neighborly acquaintance, confidence, and coöperation. The fact was emphasized that the community and not the individual determines the kind of recreation and hence may send its youth to the saloon or to school social centres. The cheap candy store was considered a demoralizing agency leading to the pool-room, saloon, and sex immorality. Mr. Harry F. Ward emphasized the break-down of community life, the necessity of public provisions of recreation in the interest of better citizenship, and the evil and unwisdom of permitting play to be unconsidered.

The section on Defectives considered recent advances in science of mental hygiene. It was shown that newer methods of testing mental defects have resulted in special classes in public schools; have shown a large percentage of those in reformatories and prisons, especially juveniles, to be defective and therefore irresponsible, incapable of reformation, and unfit to be given their freedom; and have given the courts a more intelligent basis for treating many cases. It was declared that epilepsy, insanity, and feeble-mindedness are closely connected factors in the treatment of delinquents. The colony plan of treatment, making possible separation of classes and gradation of cases, was accepted as best. Sterilization, already made legal in thirteen States and found unconstitutional in one, but constitutional in another, was shown to be little used and was believed to be largely impracticable in the present state of public opinion. Segregation is gaining rapidly in public approval. It was shown that the colony not only is not imprisonment for the imbecile and moron, but gives them largest possible freedom and happiness. The relation of venereal disease to some forms of insanity and alcohol as a direct and contributory cause of insanity were set forth. The use of the results of scientific studies of defectives and of trained psychologists by juvenile courts was described by Judge Addams of Cleveland. In Ohio every juvenile delinquent is first committed to the care of the State Board of Administration, which examines them, disposes of them individually, and then follows with its supervision. The combination of this with the New Jersey plan of special classes for defectives in public schools was advocated. It was believed that the time is ripe for a nation-wide campaign of education regarding the mentally defective.

In the section on Public Charities the following were declared to be the most pressing needs of the day: more adequate care of juvenile delinquents, special and better provision for the feeble-minded of both sexes, and more uniform laws for care of delinquent and dependent children.

The section on Standards of Living and Labor discussed protective standards for women and child workers; the work of the Oregon Industrial Welfare Commission; and the condition of mill children and messenger boys in the South. In discussing methods of maintaining standards, Secretary J. B. Andrews of the American Association of Labor Legislation described syndicalism as a sort of general discontent which gave expression to deep feelings of injustice, but as incapable of maintaining standards; collective bargaining protects gains of unions, sometimes at the expense of the general public, whereas the legislative method aims directly at just standards from the viewpoint of the worker, employer, and public. Mrs. Florence Kelley developed the necessity of more numerous local branches of the national associations represented at the conference and of greater coöperation and concentrated effort in advancing their common aims.

THE AMERICAN ASSOCIATION OF OFFICIALS OF CHARITY AND CORRECTION met at Memphis, May 4–5. This meeting was attended by members and officers of State boards of control, State boards of charity and correction, superintendents of institutions, and persons similarly connected with private institutions receiving State aid or under State supervision. They devoted themselves exclusively to topics of a very practical nature. In the 1914 session such topics were taken up as: kitchen organization and economy; organization of nursing service in a State hospital; poor relief; standard system of accounting; pay-patient departments in a State hospital; State penal system; wage system for prisoners; and the need of a professional body of administrators and supervisors of State and private charities. President A. L. Bower of Illinois stated that the charitable, correctional, and penal institutions of the country have property valued at one and one-half billion dollars and spend three hundred million dollars per year in caring for nearly 500,000 inmates. Public institutions supported by taxes cost one hundred million dollars per year.

The American Association of Societies for Organizing Charity met at Memphis early in May. Many workers from the South and Southwest were in attendance. The relation of the negro, who constitutes from 20 per cent to 50 per cent of the population of every large southern city, to charity organizations was an important topic. The inherent weaknesses of independent negro charitable societies were shown to be lack of confidence in each other, church ambitions, and financial jealousies. It was shown that the Memphis plan of a negro auxiliary to the associated charities has the advantage of enlisting the financial and personal interest of negroes and at the same time eliminating weaknesses by securing sufficient outside control. Other topics included financing charity organization societies, and problems of family relief in unorganized communities.

The eighth biennial session of the National Conference of Jewish Charities met at Memphis, Tenn., May 6–8. Cyrus S. Sulzberger of New York in his presidential address discussed the lack of understanding between Jewish immigrants and native Americans, and mistakes of the latter in handling the former. The work of the Industrial Removal Office in New York, under the direction of David M. Bressler, in distributing Jewish immigrants according to opportunities for economic and social development, was discussed. A similar agency, the Galveston Bureau, carries on a like work in the South. The new problems due to the influx of thousands of immigrants from southeast Europe, the Levantine Jews, as distinct from the Russian, Galician, or German Jews, were analyzed. The committee on resolutions recommended that a survey of Oriental Jewish communities in the United States be made. The standing committee on Palestinian charities reported progress in organizing the collection of funds for Palestine. Effects of the Panama Canal on immigration were expected by various speakers to be much less than commonly anticipated. The work of the Free Loan Association and the Self-Respect Funds of New York was explained. Other topics were: free transportation for dependent individuals and families; standards of relief; settlement work; Hebrew free schools; and after-care of orphans.

Other Conferences. The great extent and variety of charitable and philanthropic societies and movements is shown by the following partial list of meetings not here described. State conferences of charities and corrections were held in Arkansas, Colorado, Connecticut, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Minnesota, Missouri, New Jersey, New York, Ohio, Pennsylvania, Texas, Virginia, and Wiscousin. The 5th annual Child-Helping Conference of the Lehigh Valley, met at Allentown, Pa., May 9; National Federation of Remedial Loan Associations, at Philadelphia, July 9–11; Canadian Association for the Prevention of Tuberculosis, at Halifax, Nova Scotia, July 13–14; American Public Health Association, at Jacksonville, Fla., November 30–December 5; American School Hygiene Association, at Philadelphia, September 22–29; American Hospital Association, at St. Paul, August 25–28; National Conference of Catholic Charities in conjunction with several other Catholic organizations, at Washington, September 20–23; American Federation of Catholic Societies, at Baltimore, September 27–30; American Institute of Criminal Law and Criminology, at Washington, October 20–22; American Humane Association, at Atlantic City, October 5–8; American Association for the Study and Prevention of Infant Mortality, at Boston, November 12–14; Seventh Triennial Council of Jewish Women, at New Orleans in December; American Prison Association, at St. Paul, October 3–8; National Housing Association, at Minneapolis, October 21–23; besides numerous conferences on rural life and problems, on education, sanitation, safety, and public service. International coöperation in study and exchange of ideas and methods was shown by the following: Third International Congress on the Welfare of the Child, at Washington, April 22–27; Fourth Triennial International Conference on the Blind, at London, June 18–24; International Congress for Children's Welfare, at Amsterdam, Holland; Third International Congress on Diseases of Occupation, at Vienna in September; International Association for Labor Legislation, at Berne, Switzerland, September 15–17; International Association on Unemployment, at Paris, September 18–19. See also Penology.

CHARITIES AND CORRECTION, National Conference of. See Prostitution, under section entitled as above.

CHARLES I, King of Rumania, died Oct. 10, 1914. He was born in Sigmaringen, Germany, on April 20, 1839, the son of Prince Charles Anthony of Hohenzollern, head of the senior and Roman Catholic branch of the Hohenzollern. In March, 1866, he was chosen *hospodar* or prince of Rumania, which, comprising the principalities of Moldavia and Wallachia, was at the time little more than a misgoverned Turkish province. It still acknowledged the Turkish suzerainty. There was no army, the financial resources were precarious, and the condition of the people was wretched. Public affairs were in a condition bordering on anarchy. Prince Charles set about his task of governing the country with great energy, and his accomplishments were little short of marvelous. He created an army, introduced railways, and won independence for his kingdom. He also achieved military renown. In the Russo-Turkish War of 1877–78 he commanded the joint Russo-Rumanian forces and to his efforts was largely due the famous victory at Plevna. His most notable achievements, however, related to the building up of a national finance and trade. He extended the frontiers of the principality and raised it to the rank of a kingdom. He was not only the first recognized and independent sovereign of modern Rumania, but was in effect its creator. His position in the early days of his reign was not without difficulties. In 1871, when the French sympathies of his subjects exposed him as a German Prince and a Hohenzollern to great unpopularity, while failure of certain railway schemes threw discredit upon his ideas of economic development, he summoned the members of the Provisional government from whom he had accepted the Crown and announced to them his decision to abdicate. He was, however, dissuaded from his purpose. On May 22, 1881, he was crowned King of Rumania, following the victory of Russia and Rumania in the Russo-Turkish War. Thenceforth his path was comparatively clear, although by no means easy. Following the Russo-Turkish War Russia deprived Rumania of her portion of Bessarabia and allotted in return the Dobrudjá, a swampy region south of the Danube, as a compensation. There was great indignation in Rumania, and opposition became so strong that the Czar threatened to disarm the Rumanian army, a threat which drew from Prince Charles the reply, "The Rumanian army, which fought so gallantly before Plevna under the eyes of the Czar, may be annihilated, but will never be disarmed." He was, however, obliged to submit, and exerted himself to calm the national excitement. In November, 1869, he married Princess Elizabeth of Wied, who, under the name of Carmen Sylva, has gained a world-wide reputation as a writer and artist. King Charles's last year was saddened, and his end no doubt hastened by the outbreak of the great war in Europe. As a German and Hohenzollern he was reluctant to take hostile action against the German Emperor and the Emperor Francis Joseph. It was, moreover, stated that he was bound by his word of honor never to take the field against a Hohenzollern cause. Sympathies of the Rumanian people on the contrary were largely with the allies, and there was a strong sentiment in favor of participation in the war. See RUMANIA.

CHARLES FRANCIS JOSEPH, ARCHDUKE. Heir apparent to the throne of Austria-Hungary. He is the eldest son of the late Archduke Otto Francis Joseph, the younger brother of the Archduke Francis Ferdinand (q.v.). He was born in Persenberg on August 17, 1887, and on Oct. 21, 1911, was married to the Princess Zita of Bourbon of Parma, sister of the present Duke Henry of Parma. Charles Francis, up to the time of the death of Francis Ferdinand, was little known outside of Austria, but he is said to be extremely popular with the Austrian people.

CHARTER REFORM. See MUNICIPAL GOVERNMENT.

CHARTERS, MUNICIPAL. See MUNICIPAL GOVERNMENT.

CHAUTAUQUA INSTITUTION. The forty-first annual assembly of the Chautauqua Institution was held in July and August, 1914. There were courses in religious work, modern languages, mathematics and science, psychology and pedagogy, library training, music, arts and crafts, expression, physical education, mothercraft, and pre-European travel courses. Among the lecturers were Francis B. Gummere of Haverford College, President Lincoln Hulley of John B. Stetson University, Edward H. Griggs, and others. During the year *The Chautauquan*, the official organ of the institution, was merged with *The Independent*.

CHEESE. See DAIRYING.

CHEMICAL INDUSTRY. See CHEMISTRY, INDUSTRIAL.

CHEMICAL SOCIETIES. See CHEMISTRY, INDUSTRIAL.

CHEMISTRY. THEORETICAL AND PHYSICAL CHEMISTRY. Although the atomic weights of most of the elements are known with a considerable degree of certainty, redeterminations by new methods are always of value, for they may confirm the results previously obtained, and thus increase confidence in their accuracy, or, by failure to confirm them, may lead to search for possible sources of error and thereby to improvement in the methods applied. During 1914 redeterminations were published of the atomic weights of 15 elements, as follows: barium 137.36, cadmium 112.30, calcium 40.13, copper 63.55, helium 4.002, iridium 193.42, lutecium 175.00, mercury 200.37, neon 20.0, scandium 44.6, selenium 79.14 and 79.16, tellurium 127.5 and 127.6, vanadium 50.96, ytterbium 173.00 and 173.50, and yttrium 88.79; as well as of the silver-sulphur-chlorine ratios, and a study of the purity of lithium perchlorate, on which the accepted value for silver is based. It is remarkable that in no case are the results sufficiently different from the accepted values for changes to be made in the table of international atomic weights, although it appears probable that the values for helium and ytterbium are somewhat low, and those for neon, silver, and yttrium high.

Perhaps the most important piece of work in this field was the demonstration by Prof. T. W. Richards and Max E. Lembert at Harvard University that lead obtained from different sources has different atomic weights. Samples of lead from the more important radio-active minerals and of commercial lead were purified by the elaborate methods which have made the Harvard laboratory famous, and in a series of parallel experiments the atomic weights were determined by the method of precipitation of the chloride by silver nitrate. The results obtained were directly contrary to previous experience, for similar work on samples of copper, silver, sodium, and chlorine from widely different sources, and most interesting of all, on iron of terrestrial and meteoric origin, had always shown the atomic weight of each element to be constant, no matter what its source. Lead from five different radio-active minerals gave atomic weights varying from 206.40 to 206.86, while the value obtained for ordinary lead, derived from sulphide ores, was, in exact agreement with previous determinations, 207.15. It may be noted that the spectra of all the specimens of lead were identical. These differences are entirely too great to be due to errors in manipulation, and it may be concluded that the lead of radio-active origin contains one or more components of lower atomic weight, which are so similar to ordinary lead in chemical properties that the means of purification applied failed to remove them. It is especially interesting to note that this phenomenon had previously been predicted as a necessary result of the disintegration theories of radio-activity.

While no epoch-making discoveries in the field of radio-active phenomena have been announced during the year, much work has been done, and previous views as to the constitution of the atom placed on a firmer basis. As summed up by Eve at the meeting of the Royal Society of Canada in May, 1914, the atom is to be regarded as a sort of miniature solar system. The sun is replaced by a positively charged nucleus. The planets, perhaps confined to one or more definite orbits or rings, are replaced by negative electrons revolving rapidly around the nucleus, and the gravitational force is replaced by the electrical attraction between the positive nucleus and the negative electrons.

Certain work of the United States Bureau of Mines on radium deserves mention. According to the modern views of the nature of radioactive transformations, the ratio of radium to uranium in minerals should be constant. A number of apparent exceptions to this rule, especially among secondary minerals, have been found from time to time. The importance of carnotite as a source of radium led Lind and Whittemore of that bureau to make an elaborate investigation of the ratio in this mineral. Samples from small lots of carnotite were found to exhibit abnormal ratios, both high and low, but samples representing hundreds of pounds or tons gave a radium-uranium ratio identical with that of the standard, pitchblende. The most plausible explanation for these results is that radium has been transposed in the ore deposit, leached out in some places and concentrated in others, producing local differences which are equalized by mixing large quantities of ore. The Bureau of Mines also announced that a new method for the extraction of radium from its ores has been worked out, which is expected to result in a considerable lowering of the cost of its production.

The application of the Roentgen or X-rays to the study of atomic and molecular structures has been actively advanced during the year. Moseley has extended his studies of high-frequency spectra to a large number of elements, with highly interesting results. The method consists in subjecting the substances to bombardment in a cathode tube, analyzing the X-rays emitted by them with a crystal plate, and photographing the resulting spectrum bands. For each band $n = A(N-B)^2$, where A and B are constants, n the nucleus electronic charge, and N the atomic number. Assuming N to be 13 for aluminium, that for gold, the last examined, is 79, known elements corresponding to all but three of the numbers between, and the order of the atomic numbers coinciding more exactly than the order of the atomic weights with the periodicity of chemical properties. The atomic number is a more fundamental property of an element than the atomic weight, for it depends on the number of positive units of electricity contained in the atomic nucleus.

The application of the X-rays to the determination of the molecular structure of crystals has received further attention, especially from W. H. and W. L. Bragg. That the grouping of the atoms rather than of hypothetical physical molecules is responsible for the properties of crystals has now been certainly demonstrated, and Groth has pointed out that this had been previously predicted by crystallographic studies. It may now be accepted that molecules exist only in amorphous substances, that is, in gases, liquids, and colloids, while crystals consist of interpenetrating point-systems of atoms. The structure of the crystals of diamond, sulphur, copper, sphalerite, calcite, fluorite, pyrite, and quartz have been worked out by the Braggs.

INORGANIC CHEMISTRY. Several instances of allotropy in the elements have been discovered, the most noteworthy work being that done by Bridgman on phosphorus. By subjecting the ordinary yellow form of this element to extremely high pressures there was produced at low temperatures a yellow hexagonal modification, and at 220° a black one with high density, fair electrical conductivity, and other marked differences from previously known forms.

A number of new compounds have been prepared, chiefly salts of the rarer metals with less common acids, but including a series in which the usually bivalent metal nickel appears to be univalent. Studies of the rare earths, especially of terbium and the constituents of the old ytterbium, both as to properties of their compounds and means for their separation, have been carried on by several investigators. Work on the complexes of cobalt, chromium, and similar metals was continued by Werner and his students and several cases of optical activity of compounds containing asymmetric atoms of these elements discovered.

Mention should be made of the work of the Geophysical Laboratory of the Carnegie Institution of Washington on mineral synthesis. In addition to the working out of the phase relations of several rock-making silicates, a particularly elaborate study was made by Allen, Crenshaw, and Merwin on the two dimorphous groups, pyrite-marcasite (FeS_2) and sphalerite-wurtzite (ZnS). It was shown that the unstable forms, the second in each case, tend to develop in the presence of excess of acid and at elevated temperatures.

ORGANIC AND BIOLOGICAL CHEMISTRY. Work in organic chemistry has been directed, as in previous years, chiefly toward the synthesis of new compounds. Many of those prepared were of only theoretical importance, but others, such as the dyes, were of actual commercial value. The brilliant work of Emil Fischer on the synthesis of complex organic substances has been extended to the glucosides and tannins, with a considerable degree of success. A few studies of the coloring matters, essential oils, and active principles of various vegetable and animal products were made during the year, among which may be mentioned Willstätter's work on the presence of chlorophyll in brown algæ, and on the anthocyans, a group of coloring matters of flowers and fruits, which were shown to be vegetable bases, in which the basic properties are due to oxonium oxygen in quinoid combination; and the work of various chemists on the composition of bile pigments, and on the constituents of urine.

Investigations which may prove to have great importance to the human race are those of Mendel and Osborne on the effect of various proteins on the maintenance and growth of the animal organism, and of Funk on the vitamines, nitrogenous compounds present in certain vegetable tissues and their bearing on nutrition. The vitamines of grains occur chiefly in the bran, and are largely removed in modern processes of milling. The greater wholesomeness of whole-grain products, in which the vitamines remain, is thus evidently connected with the important part played by these substances in the metabolism of carbohydrates.

ANALYTICAL CHEMISTRY. Research in this department has been devoted principally to the improvement of existing methods with respect to their accuracy and rapidity. The introduction of new materials in commercial channels is always followed by the publication of methods for the analysis of these substances or their constituents. The appearance of articles on the determination of chromium, nickel, titanium, tungsten, and vanadium in steels and ores, of potassium and phosphoric acid in fertilizers, and of the various constituents of aluminium alloys, bronzes, and glasses, is a good index of the direction in which industrial development is taking place. See CHEMISTRY, INDUSTRIAL; PHYSICS.

CHEMISTRY, INDUSTRIAL. (See also CHEMISTRY.) Two conspicuous events have exerted an important influence on the progress of Industrial Chemistry during the past year. The first of these was the change in the tariff on sugar, resulting in a diminished output of cane sugar from Louisiana and also of beet sugar in various parts of the United States, with a corresponding financial loss to those connected with these industries. The second was the war in Europe, which stopped the shipping of chemicals and dyestuffs from Germany, not only to the United States but also to other English-speaking countries. Whether this condition would result in the development of new industries at home was a question that only the future could answer.

ORGANIZATIONS. *The American Chemical Society* held its spring meeting in Cincinnati, Ohio, during April 7–10, and had planned for a meeting to be held in Montreal, Canada, during the autumn, but this was abandoned owing to the war in Europe. The membership of this great society had increased to over 7000. The president during the year was Theodore W. Richards, of Harvard University, who was succeeded by Charles H. Herty, of the University of North Carolina.

The American Institute of Chemical Engineers held its summer meeting in Troy, N. Y., during June 17–20, and its annual meeting in Philadelphia, Pa., during December 2–6. Its membership is 214. The president during the year was M. C. Whitaker, of Columbia University, who was succeeded by George D. Rosengarten, of Philadelphia, Pa.

The Society of Chemical Industry held its thirty-third annual meeting in University College, Nottingham, England, during July 15–17, 1914, under the acting presidency of Dr. Rudolph Messel, who filled the chair owing to the fact that Sir William Crookes was obliged to relinquish the office when he was chosen to the presidency of the Royal Society. The secretary reported the membership to be 4142 as compared with 4244 last year. G. G. Henderson, professor of chemistry in the Royal Technical College of Glasgow, Scotland, was chosen president for the coming year and Manchester, England, as the next place of meeting.

The preliminary announcement of the Ninth International Congress of Applied Chemistry was distributed. The Congress was announced to be held in Petrograd, Russia, during Aug. 1–14, 1915, under the presidency of P. I. Walden of the Polytechnical School in Riga.

MEDALS. On January 23, the W. H. Perkin medal was awarded to John Wesley Hyatt for his invention of celluloid and his development of the industry connected with that compound. The W. H. Nichols medal of the American Chemical Society was on March 6 conferred on Moses Gomberg, professor of organic chemistry at the University of Michigan for his researches on tri-phenylmethyl, resulting in the discovery of the existence of carbon in the trivalent state. The Willard Gibbs medal of the Chicago section of the American Chemical Society was on May 15 given to Ira Remsen, president emeritus of Johns Hopkins University, for his many achievements in chemistry. The first award of the Charles Frederick Chandler medal of Columbia University was made, on May 29, to Dr. Leo H. Baekeland, who delivered the lecture on that occasion on "Some Aspects of Industrial Chemistry." The medal of the Society of Chemical Industry was on July 15 conferred on Sir Henry E. Roscoe for his eminent service to chemistry.

METALS. *Aluminum.* Aluminum foil is finding increasing use as a substitute for tin foil, especially for wrapping confectionery, tobacco, etc., and has the advantage of being lighter and more durable than the tin foil. It is made in Switzerland by painting sheets of pure aluminum with a solution of oil that is soluble in water, placing the sheets one upon another, or folding them, and then rolling them out to double their length in a rolling mill, then folding the sheets and rolling out again and repeating until the desired thinness is obtained. The cylinders of the rolling mill are warmed with water to 113° F. The sheets are rolled cold and finally annealed in a vacuum retort, then cooled gradually.

Mercury. A growing use is the coating of ships' bottoms with a paint containing mercury to prevent organic growth. Mercuric oxide is the active poison in antifouling paint successfully used on ships' bottoms. The metal appears to be now but little employed in making mirrors, as silver nitrate is now chiefly used. Increasing use of mercury is to be expected in the manufacture of electrical appliances and of fulminates, and possibly of paints for protective coatings on metals. The demand for mercury for amalgamating gold and silver has greatly decreased with the decreased supply of free milling ores and the increased application of cyanidation to gold and silver ores.

Platinum. After the discovery of this valuable metal in Westphalia it was reported that the amount of platinum present in the rock varies from 0.9 to 1.9 troy ounces to the cubic yard which is very rich as compared with the Russian deposits. A plant was established at Wenden, Westphalia, for the extraction of the platinum on a large scale. It is found in the form of an alloy and after being brought into solution is extracted as the nitrate.

Tin. The amount of tin available is so comparatively small that anything pertaining to its supply is of interest. From the Malay Peninsula where its mining is one of the most important industries came the announcement that mining methods are undergoing a gradual change by the introduction of the dredging system, and it was predicted that in two years the price of tin would reach a level considerably lower than the average of the previous two years. Nineteen dredges were placed on various properties in Malaya and Siam. It was said that some of the dredges were producing 600 piculs (40 short tons), and other methods were being pursued, including hydraulicking, lode mining, and calabashing. All this signified a greater output. Bolivia was reported too to be showing excellent development work and on the whole was systematically prosecuting the industry. The market therefore not only would have to bear an increased output from Malaya, but also from Nigeria and Bolivia.

The recovery of tin from tin-plate waste by

1914 had gained great importance. There were three general methods of separation—mechanical, chemical, and electrolytic,—but of these the most important was the electrolytic method of detinning. As a rule, hot liquid caustic soda was employed as electrolyte. Loosened chips of tin plate packed in wire baskets act as anodes, while the iron bath walls or iron plates suspended therein serve as cathodes. When separated, the tin is spongiform. By far the greatest amount of tin-plate waste in 1914 was being detinned by the chloride method that Lambotte, of Brussels, was the first to apply on a large scale. The principal requirements for a successful application of this method were absolute exclusion of moisture during the process of detinning, avoidance of an unduly high temperature, and proper washing of the detinned waste.

Radium. The existence of pitchblende and uranium ochre containing radium was reported from the Gaya district in Northeastern India. The pitchblende occurs as rounded nodules distributed throughout certain basic segregations, several feet in diameter, in pegmatite. In these basic segregations the following minerals occur, but not always together: White and yellow mica, triplite, ilmenite, tourmaline, pitchblende, and uranium ochre; while columbite, zircon, and torbernite also were recorded. Rewards (of $25,000 in Ontario and $5000 in British Columbia) were offered in Canada to the first person who discovers radium in sufficient quantity for commercial extraction. The Chamber of Mines in Vancouver, British Columbia, undertook the founding of a public radium institute in that city.

A new method for controlling smelter smoke was announced from California. The process was secret, but runs of a small plant were made on sulphide ore from the Balaklala mine, averaging about 45 per cent sulphur, and the experimenters say that every vestige of the mineral was removed from the smoke fumes.

The METHANOMETER, or Williams Fire-Damp Indicator, was a new detector of the hydrocarbon fire-damp, a gas responsible for many explosions in coal mines. The apparatus is made in two parts; one, an instrument which is very sensitive and responds quickly when fire-damp is present; the other, a dial indicator which shows the exact percentage of methane in the atmosphere. The detector and indicator may be placed side by side, enabling the miners to know by what percentage of fire-damp they are surrounded, or the indicator may be placed at any convenient centre. The connection between detector and indicator is electric.

ARTIFICIAL DIAMONDS. There was published in Paris early in the year an account of the manufacture of artificial diamonds by decomposing calcium carbide in an electric furnace. The details are as follows: The furnace was fitted with two horizontal electrodes, which were carbon rods approaching one another within 10 inches. It was charged with calcium carbide, fused by the continuous currents applied. At the end of 12 hours the carbide was found to be enriched with fine crystals near the anode. In the space between the two electrodes the carbide was left undecomposed. The cathode, however, was surrounded by a black mass, from which some flakes of graphite and also some colorless, mostly irregular, crystals or globules were isolated, which consisted of pure carbon. When the furnace had been run for six hours, the length of these crystals was $\frac{1}{17}$ inch, the length increased with longer runs, and crystals of $\frac{1}{10}$ inch were obtained by the run of 12 hours; the rate of growth was generally $\frac{1}{125}$ inch an hour.

INFUSORIAL EARTH. Infusorial earth was being mined actively in California and Nevada and was finding new uses. Its porosity renders it a nonconductor of heat, and this quality in connection with its lightness has extended its use as an insulating packing material for safes, steam pipes, and boilers, and as a fireproof building material. In the United States a new use was reported in the manufacture of records for talking machines. For this purpose it is boiled with shellac, and the resulting product has the necessary hardness to give good results. In Europe, infusorial earth has been used in preparing artificial fertilizers, especially in the absorption of liquid manures; in the manufacture of water glass, of various cements, of glazing for tiles, of artificial stone, of ultramarine and various pigments, of aniline and alizarine colors, of paper, sealing wax, fireworks, gutta-percha objects, Swedish matches, solidified bromide, scouring powders, papier-mâché, and other articles.

CHLORINE. "Liquid chlorin" is the name under which liquefied chlorine gas appears in commerce. During recent years the manufacture of liquid chlorine has become well established in the United States and the product was said to be displacing bleaching powder in a number of industries. It was also being used in chemical industries such as detinning. The gas is generated by the electrolysis of salt brine and is then dried, compressed, and cooled until it liquefies. It is marketed in steel cylinders having a capacity of from 100 to 110 pounds weight. The results obtained by the calcium hypochlorite process in emergency water sterilization have led to experiments with liquid chlorine for the same purpose. Excellent results as to bacterial efficiency were obtained.

MILK. A new pasteurizing process was described as follows: After being tested for acidity and butter fat the milk is first passed through a fine sieve and then heated. This is to facilitate its passage through the clarifier, which removes all impurities. It is then pasteurized at a temperature of from 155 to 165 degrees which arrests the development of the acid in the milk and destroys the bacteria. The milk then passes into the "homogenizer" where it is forced under a pressure of 3500 pounds through tiny tubes into an agate and bronze device, which grinds each separate globule of butter fat into fine particles and makes the liquid of the same consistency throughout. It is then ready for cooling and bottling or canning. The sterilizing is done after the fluid has been sealed.

A new process for making dry milk came from Stavanger and was described as follows: The process is mechanical and is not based on previous vacuum, pressure, or spray systems. The apparatus consists of a drying chamber built of bricks, insulated wood, and metal lining, within which is passed an endless traveling steel band about 20 inches in width. Through the top of the drying chamber a vessel is inserted, wherein the milk is vaporized before supplying it to the band for final drying. In this vessel the vaporization rids the milk of two-thirds to three-fourths of its original content of water. A revolving cylinder, dipping into a cup of the partly vaporized milk, conveys the liquid to the slowly moving metal band, the milk film being thus passed into the drying chamber where it is subjected to superheated circulating air, and when scraped off from the band by a keen-edged knife contains only 2 to 5 per cent of water. The degree of desiccation may be regulated by controlling the temperature of the heated air, and, to some extent, by varying the velocity of the steel band. Dry milk, sometimes called evaporated milk or milk meal, must not be confused with condensed milk, for the two are produced by entirely different processes. Dry milk is used in connection with products of the bakery, being employed to advantage as an ingredient in ice cream, bread, biscuits, and chocolate. It is coming to be used on ships, expeditions, and explorations, where convenience of transportation and keeping qualities are important.

Palm Sugar. The palmyra palm is one of 16 varieties of palms growing in Ceylon from which sugar may be extracted. It is the principal palm grown in the northern part of the island, especially in the neighborhood of Jaffna, but is rare about Colombo and in the upcountry. A company was organized in Colombo to manufacture and refine sugar, and its intention was to develop the production of sugar in Ceylon, which hitherto had imported nearly all that it used from Java.

Explosives. Trotol gelatin was a new explosive invented by Lieut. Harold C. Woodward which is referred to as the "War Department's newest, safest, and most powerful explosive." Its composition was secret, but it was described as not freezing or sweating, that it was impervious to weather conditions and shock, and that it could be hammered without destroying its power or setting it off. It is twice as powerful as 80 per cent dynamite. Trotol gelatin is not a pushing force like gunpowder, but has a shattering force, and is therefore well adapted for demolition work.

Sabulite is a recent explosive which it is claimed is two-thirds more powerful than dynamite. The chief feature of sabulite is that it can be handled without danger both while in course of manufacture and in use. None of the ingredients is in itself explosive. Sabulite is not affected by heat or cold. It has been subjected to a temperature of 258 degrees Fahrenheit and 75 degrees below zero without its properties being affected. Another salient point about this explosive is that no poisonous fumes are given off in the explosion. Sabulite is used for blasting purposes only.

The United States Bureau of Mines found that the total production in the United States of explosives according to figures received from manufactures was in 1913 463,514,881 pounds (231,757 short tons), as compared with 489,393,131 pounds (244,966 short tons) for 1912. This production was segregated as follows: black powder 194,146,747 pounds; "high" explosives other than permissible explosives, 241,682,364 pounds; and permissible explosives 27,685,770 pounds. These figures represented a decrease of 36,146,622 pounds of black powder, and an increase of 7,212,872 pounds of high explosives and 3,055,500 pounds of permissible explosives.

Rubber. The guayule shrub in Mexico and Southwestern Texas was found a profitable source of rubber, the extraction being by crushing and a simple chemical process through which the shrub is put. It was decided to apply this method to the bulia tree which is very abundant in the Fiji Islands, and it proved so successful that efforts were at once taken to exploit the industry. An enormous tonnage of the trees can be grown upon a small tract of land where they are planted and cultivated. There are enough wild trees, however, to provide a supply for years to come. Owing to the fact that the Fiji Islands are of small area and are supplied with shipping facilities, the bulia trees are convenient to transportation. The bulia tree is of very rapid growth. It attains a size of 8 to 10 feet in one year. Experts who have analyzed the bulia rubber report that it is of as high quality as the best Para product.

A modified variety of rubber sponge known as "rubber foam," suitable for pneumatic tires, was produced in Paris by an ingenious process. The product consisted essentially of india-rubber containing numerous minute bubbles of gas distributed throughout its mass. The material resembles a rubber sponge in which the cavities are separate and do not communicate with each other. Hence the name "caoutchouc mousse," or rubber foam. The process of manufacture is based on the increase of solubility of gases with increase of pressure. Rubber in the pasty stage of vulcanization is inclosed in a steel tube with nitrogen at a pressure of 3000 to 4000 atmospheres. The compressed gas dissolves in the semiliquid rubber, which, when the tube is opened, expands to four or five times its former volume and solidifies, imprisoning in its mass myriads of little gas bubbles. The product combines the properties of its two ingredients. It is as flexible as rubber and as compressible as a gas, so that it may be employed in the place of the air tube of an automobile or bicycle tire. A tire so constructed is noncollapsible, for a puncture affects only a few of the innumerable gas bubbles. Another valuable property of rubber foam is its lightness. Its density varies from 0.4 to 0.17, according to the quantity of gas forced into it. Hence, it is an excellent material for life preservers and small folding life rafts.

Artificial Wood. A new product that may be substituted for natural wood was invented in France. It is made by transforming straw into a solid material having the resistance of oak. The straw after being cut into small pieces is reduced by boiling to a paste, to which chemicals are added. When the paste has been reduced to a homogeneous mass it is put under presses, and planks, beams, laths, and moldings of all sizes are readily made. This new material can be sawed like natural wood. As a fuel it emits a bright flame and little smoke. It is said to be adaptable to the manufacture of match stems.

A New Fibre. The spread of the water hyacinth (*Eichornia crassipes*) in the waters of Cambodia and other portions of Indo-China led to experiments with the plant as a fibre producer. It is possible to extract the fibre from the stalk by means of a Ducheman machine and after drying, preferably by gradual process, it can be made into rope and twine as well as coarse thread suitable for matting and sailcloth, and its use in Indo-China particularly is possible in bags for rice and other grain exports in place of the jute bags now imported. On a native loom it affords a strong flexible cloth of about the same quality as jute. The fibre takes dyes readily and has high tenacity. Its weight is about the same as that of jute, but can be reduced by treatment with chrome alum, which makes the product waterproof.

LUMINOUS INK. Luminous paint has existed for some time, and match holders, clock faces, and similar things that are lost in the dark have been coated with it. A German chemist produced a luminous compound, cheap enough to use for printing ink, which will make the type of a newspaper visible in the dark. It is claimed the compound will remain luminous for 10 years. At the same time that the luminous ink had been announced there was a French patent issued to a chemist for a bleachable ink that would enable old newspapers to be repulped for news print paper.

NEW TRANSPARENT FABRIC. Cellophane, a new product invented in Paris, has the properties of a flexible fabric and is at the same time transparent. It is a cellulosic sodium xanthate which looks like a sheet of paper, but is as transparent as glass, very tough, insoluble in water, impermeable to greasy substances, unattackable by ethers, alcohols, and alkalies. Biophane has the same qualities, but is thicker; it is to cellophane what cardboard is to paper, and it costs less, weight for weight. Perfumery uses cellophane as a wrapping for its products, and biophane serves in the manufacture of transparent boxes that, while they are as strong as the ordinary kind, allow the contents to be seen. Compressible tubes may also be made of it instead of the more expensive tin. Medicine employs cellophane in numerous ways, owing to its valuable quality of being easily sterilized, either by steam, which it will stand up to 150° C., or by boiling water, alcohol, hydrogen dioxide, formol, or lysol. It is also very serviceable in the preservation of objects wrapped in it, particularly dressings. Sterilization is effected at 145°, and the enclosed object remains perfectly sterile, owing to the peculiar properties of the cellophane.

A NEW ANTISEPTIC. A new antiseptic that is of value in the treatment of typhoid fever, dysentery, cholera, and other diseases arising from the presence of bacteria in the intestinal tract is giving excellent results. It consists of a solution of sodium sulphate, to which has been added a quantity of trimethyl-methoxyphenol in the form of a gelatin emulsion.

EFFECT OF THE WAR IN EUROPE. The effect of the war in Europe has been to stop the importations into the United States from Germany and Austria-Hungary of raw materials and chemicals that are so largely used in industrial chemistry. It was hoped that in some instances this condition would tend to improve existing industries in America by the establishment of new plants, and the bureaus of the United States Department of the Interior have made careful investigations with a view of ascertaining the existence of deposits of raw materials and their development. Three industries were specially affected, that is, the fertilizer, the dyeing, and the chemical industries. For the maintenance of agriculture mineral fertilizers are essential, and these contain large quantities of potassium salts, which had been imported from Germany. There are deposits of these salts in California and efforts were being made to develop them for our own consumption. Secretary Lane announced in September that the first American potash would be produced by a plant in Searles, Cal., before the beginning of 1915, and the output that at first would be five tons a day would soon be increased to 120 tons. Deposits of phosphates are abundant in the Southern States and the announcement was made that there were 3,000,000 acres of phosphate land in Western States lying near smelters from which is produced the sulphuric acid necessary to convert these phosphates into soluble forms available for plant food. Sodium nitrate (Chile saltpetre) comes almost entirely from the west coast of South America and two-thirds of the output from that region has been exported to Europe, but owing to inability to obtain money from foreign bankers many of the works have been shut down. A large quantity of the artificial dyestuffs used in the United States comes from abroad, and for the year ending June 30, 1914, the imports of these products from Germany alone amounted to $7,940,061. There was hope that this quantity might be produced by American manufacturers whose aniline dyes are said to be fully equal to the German. The output of this material in 1909 in the United States had a value of $16,428,676, but manufacturers claimed that they cannot be expected "to build up the dye industry without an increase in the tariff." From England it was reported that for all orders received after Dec. 1, 1914, the prices of materials dyed black would be increased by 10 per cent and colored materials would be advanced 20 per cent. Certain materials such as antimony and manganese used in the steel industry had been imported, but deposits in the United States were to be developed for these metals. Kaolin, of which 85 per cent had been imported for the use of potters, was in 1914 being mined in Southern California. Talc, which is also used in making pottery and finds a demand as a filler in making paper, had been imported from France and Italy, but since the supply was cut off from abroad it was reported that a large deposit of this mineral of great purity had been discovered near Silver Lake in California. Deposits of raw materials, hitherto not available owing perhaps to the high cost of transportation, were likely to be developed, and chemical products, including drugs, were likely to be manufactured in the United States in larger quantities than formerly, provided satisfactory tariff conditions could be had.

LITERATURE. A series of *Bulletins*, showing the value of certain descriptions of merchandise exported from Germany, Austria-Hungary, and Great Britain to all destinations in a recent year, were issued by the Board of Trade in London. The following pertain to industrial chemistry: Cement, Fertilizers, Fire-proof Bricks, etc., Heavy Chemicals, Hollow Glassware, Medicines, Lubricating Oils, Painters' Colors and Varnishes, Perfumes and Cosmetics, Photographic Goods, Scientific Instruments (except electrical), and Soaps.

CHESS. The European War interrupted the international chess tournament which opened at

Mannheim, Germany, in July. With the competition about two-thirds finished the prizes were distributed according to the standing of the players when the halt was called. The year was notable, however, because of the meeting of Dr. Lasker and J. R. Capablanca at the championship tourney held in St. Petersburg. The Cuban champion gained an early lead but eventually was overhauled and beaten. Rudolph Spielmann won the Gambit tourney at Baden, thereby stamping himself as one of the most proficient players in the world at this particular style of the game.

The twenty-second American intercollegiate tournament was won by Yale after a play-off with Columbia. Pennsylvania carried off the laurels in the triangular college matches. Cornell was second and Brown third. In the Western intercollegiate tourney the University of Chicago and Armour Institute tied for first place.

Several notable contributions to the literature of the game were made during the year. These include a handbook by Carl Schlecter of Vienna; *Chess Swindles* by F. J. Marshall, champion of the United States, and *Rice Gambit* by O. Duras of Prague.

CHICAGO, University of. A university for higher education, founded in Chicago, Ill., in 1892. The number of students enrolled in the autumn of 1914 was 3888, and the faculty numbered 274. There were no notable changes in the faculty during the year and no noteworthy benefactions were received. The productive funds of the university amount to $18,598,275, and the income from all sources to $910,496. The library contains 431,362 volumes. The president is Harry Pratt Judson.

CHICAGO, ROCK ISLAND, AND PACIFIC SITUATION. See Railways.

CHILD LABOR. Perhaps the most important development during the year in the child labor problem was the greater recognition given by the Federal government. The Children's Bureau of the Department of Labor rendered its first report, and the Palmer Bill was introduced into the House, receiving the unanimous approval of the committee. In essence, the bill provides a 16-year age limit for the employment of children in mines, a 14-year limit in factories, and 18 years for night work or for more than eight hours per day. Moreover the bill would prevent the sending or the offering for shipment in interstate commerce of the products of manufacturing or mining establishments where child labor is employed in violation of these standards. It thus went farther than previous bills which merely prohibited the actual shipment of goods in whose manufacture child labor had been employed. Another fact of importance was the decision in Massachusetts to continue the eight-hour law for children in spite of numerous and powerful protestations. There are now seven States, namely, Alabama, Nevada, New Mexico, North Carolina, South Carolina, Utah, and Wyoming, which have no 14-year limit, while Mississippi still has none for boys.

National Child Labor Conference. The tenth annual conference on child labor was held under the auspices of National Child Labor Committee at New Orleans during March. "Child Labor and Law Enforcement" was the general topic discussed. It was pointed out in this connection that in several of the Southern States the law was often very laxly, and sometimes not at all, enforced. In North Carolina, for example, Dr. McKelway stated that it was hardly possible to get juries in the cotton mill countries to bring in a true bill against violations of the law. Inability to pass child labor statutes in the South was ascribed to the recent development of the textile industries there, and the fact that but half a century has elapsed since the abolition of slavery. Among the other topics considered were: the need of a constructive appeal; the menace of child labor; the enlightenment of the public; the child on the street; the difficulty of securing child labor legislation in the South; the place of woman in the carrying out of the law, and many kindred subjects. The reports from several State committees showed advances in nearly every case. A resolution was passed expressing regret at the act of Maryland in reducing the age limit for workers in the canneries.

Legislation. Of the 14 States holding legislative sessions in the year all took some action on child labor, either favorable or adverse; and no fewer than five enacted entirely new codes. All of the latter were steps in advance and sought to reduce hours, to prohibit night work, and to raise the minimum age for employment especially in the hazardous occupations. The first child labor law ever secured by popular initiative was that enacted by Arkansas in September, after the legislature had voted a similar bill down. This is based on the Uniform Child Labor Law and establishes a 14-year-old limit, the eight-hour day, and other provisions of the model statute, besides granting the State board of health the power to extend the list of dangerous or unhealthful trades prohibited to children. Kentucky, New Jersey, and New York were the only other States to make the eight-hour law a part of their code; but Mississippi, on the other hand, amended her provisions on this matter by lowering her requirement. Efforts were made to repeal this law in Massachusetts and Ohio, but were unsuccessful. The 14-year limit was extended by Georgia, Kentucky, Louisiana, and New Jersey, while South Carolina defeated a bill to establish it. A backward step was taken in Maryland, when the eight-hour law was amended so as to apply only to boys under 14, and girls under 16, the ages formerly being 16 and 18 respectively.

Bibliography.—Jane Addams, *Plea For More Play, More Pay, and More Education For Our Factory Girls and Boys;* A. Freeman, *Boy Life and Labour;* Hartford Vocational Guidance Committee, *Report;* G. B. Mangold, *Problems of Child Welfare;* Edwin Markham and others, *Children in Bondage; Report of the New York State Factory Investigating Commission.*

CHILDREN'S COURT. See Juvenile Court.

CHILDREN'S DISEASES. See Hygiene.

CHILE. A South American republic, on the Pacific coast. The capital is Santiago.

Area and Population. The republic extends from Peru to the southern limits of South America, about 4230 kilometers. The width varies, but may be stated as approximately 285 kilometers. The country is divided into 23 provinces and one territory. The area, as officially stated, and the population, as calculated for the end of 1911, are shown in the following table; the last column gives the provincial capitals:

Provinces	*Sq. km.*	*Pop.*	*Capitals*
Aconcagua	14,210	134,186	San Felipe
Antofagasta	120,718	120,522	Antofagasta
Arauco	6,866	62,495	Lebu
Atacama	79,585	65,495	Copiapó
Bío-Bío	13,587	101,329	Los Angeles
Cautín	15,105	164,396	Temuco
Chiloé	22,255	92,665	Ancud
Colchagua	9,987	159,548	San Fernando
Concepción	8,422	227,732	Concepción
Coquimbo	34,862	179,982	La Serena
Curicó	7,714	108,455	Curicó
Linares	10,210	112,566	Linares
Llanquihue	91,676	116,094	Puerto Montt
Magallanes (Ter.)	171,438	24,009	Punta Arenas
Malleco	7,701	114,098	Angol
Maule	6,410	117,324	Cauquenes
Nuble	8,823	171,047	Chillán
O'Higgins	6,066	94,883	Rancagua
Santiago	14,672	556,601	Santiago
Tacna	28,958	43,654	Tacna
Talca	9,948	132,982	Talca
Tarapacá	46,957	117,922	Iquique
Valdivia	21,637	136,441	Valdivia
Valparaíso	5,059	305,375	Valparaíso
Chile	*757,366	3,459,951	Santiago

* 292,366 square miles.

The population of Santiago is estimated at about 400,000 and of Valparaíso about 200,000. The 1907 census returned the population of the larger cities and towns as follows: Santiago, 332,724; Valparaíso, 162,447; Concepción, 55,330; Iquique, 40,171; Talca, 38,040; Chillán, 34,269; Antofagasta, 32,496; Viña del Mar, 26,262; Curicó, 17,573; Temuco, 16,037; La Serena, 15,996; Talcahuano, 15,561; Valdivia, 15,229; Punta Arenas, 12,199; Coquimbo, 12,106; Los Angeles, 11,691. Marriages, as reported for 1912 and 1913, numbered 21,298 and 21,341; births, 135,255 and 139,974; deaths, 104,295 and 111,255; excess of births over deaths, 30,960 and 28,619. The government encourages immigration, offering facilities for the transportation of workingmen desiring to settle in Chile; nevertheless immigration declined from 6024 in 1908 to 3098 in 1909 and 2543 in 1910.

Education. Primary instruction is free, but not compulsory; there is a low average attendance at the public schools. The State religion is Roman Catholicism, but religious toleration prevails.

Production. The area under cultivation in 1911–12 was 1,233,663 hectares, or 1.62 per cent of the area of the country. Of the cultivated area, 584,264 hectares, or 47.4 per cent, were planted to cereals. Some of the important crops in 1911–12, in respect of area and yield, were as follows: wheat, 444,870 hectares, 6,150,231 metric quintals; barley, 41,876 hectares, 707,862 quintals; oats, 27,972 hectares, 490,651 quintals; corn, 22,766 hectares, 387,774 quintals; kidney beans, 36,559 hectares, 454,262 quintals; potatoes, 26,672 hectares, 2,627,954 quintals; vines, 56,781 hectares, 19,643,799 decaliters of wine. Chile's wheat production was 5,162,035 quintals in 1907–08, 4,828,822 in 1908–09, 5,373,281 in 1909–10, 4,960,216 in 1910–11, and 6,150,231 in 1911–12. Wool production in 1911–12 amounted to 92,493 quintals, of which 57,035 were credited to Magallanes territory.

The mineral resources are exceptionally rich and include, besides various metals, deposits of sodium nitrate, iodine, calcium borate, sulphur, salt, coal, etc. Formerly the country was famous for its copper production; there was a decline, but in recent years the copper output has increased. The northern provinces of Antofagasta and Tarapacá are notable for their enormous production of sodium nitrate. The value of the sodium nitrate export in 1912 was about 86.7 per cent of the value of the total exports. The value of the total mineral production in 1912 is reported at 372,662,774 pesos, as compared with 178,768,170 pesos in 1902.

Industrial establishments, as reported for 1911, numbered 5722; capital, 471,287,333 pesos; persons employed, 74,618; wages paid, 73,064,668 pesos; raw materials used, 300,727,098 pesos (Chilean 194,966,052 pesos, foreign 105,761,046 pesos); annual product, 535,037,093 pesos.

Commerce. Imports and exports in 1913 were valued at 329,517,811 pesos gold and 391,237,197 pesos gold respectively, as compared with 334,454,779 and 377,104,530 in 1912. In the special trade, imports and exports have been as follows, in thousands of pesos gold:

	1909	*1910*	*1911*	*1912*	*1913*
Imports	262,083	297,486	348,990	334,455	329,518
Exports	306,430	317,218	330,621	377,105	391,237

The principal classified imports in 1912 and 1913 respectively were as follows, in thousands of pesos gold: textiles and their manufactures, 82,016 and 76,843; mineral substances, 59,711 and 61,028; fuels, oils, paints, etc., 49,312 and 54,316; machinery, apparatus, instruments, etc., 44,264 and 40,990; vegetable substances, 36,235 and 38,176; animal substances, 24,813 and 21,502. Classified exports in 1912 and 1913, in thousands of pesos gold: mineral products, 336,068 and 346,209; animal products, 20,770 and 25,225; vegetable products, 19,836 and 19,399; beverages, 173 and 192; miscellaneous, 258 and 213; total, 377,105 and 391,237. The principal exports are reported as follows for 1911 and 1912 respectively, in thousands of pesos gold: sodium nitrate, 262,649 and 292,327; copper, 18,687 and 30,777; wool, 7696 and 8367; calcium borate, 6231 and 6145; iodine, 5140 and 5385; hides and leather, 8983 and 5330; meat, 3769 and 3249; oats, 1590 and 2363; wheat, 1384 and 2124; beans, 1834 and 1604; bran, 1150 and 1286.

Imports and exports by principal countries, in thousands of pesos gold:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
U. Kingdom	105,751	98,709	150,966	152,187
Germany	90,929	81,036	76,879	84,309
United States	46,045	55,039	67,163	83,324
France	19,893	18,146	21,010	24,241
Belgium	8,555	15,538	12,633	15,548
Peru	13,198	13,179	2,502	2,557
Australia	8,273	9,161	351	......
Argentina	11,238	8,939	3,093	2,835
India	9,144	8,732	......	......
Italy	8,246	8,702	1,089	1,786
Spain	3,518	3,112	5,026	2,705
Brazil	2,356	2,663	4,745	1,439
Uruguay	1,521	1,742	7,446	1,162
Netherlands	960	184	11,604	12,247
Japan	366	387	2,623	3,653
Total including other	334,455	329,518	377,105	391,237

Share of the principal ports in the total trade, 1913: Valparaíso, 47.98 per cent of the imports and 5.08 per cent of the exports; Talcahuano, 10.83 and 2.67; Antofagasta, 10.07 and 15.91; Iquique, 8.65 and 17.91; Taltal, 3.10 and 9.58; Tocopilla, 1.89 and 10.54; Punta Arenas, 3.16

and 4.04; Pisagua, 0.71 and 3.45; Mejillones, exports 11.12 per cent; Caleta Buena, 7.71; Coloso, 4.72.

Shipping. In 1912 there were entered in the foreign trade 5093 steamers, of 15,070,782 tons, and 579 sail, of 1,061,745 tons; total, 5672 vessels, of 16,132,527 tons. Cleared 4548 steamers, of 13,387,035 tons, and 498 sail, of 926,480 tons; total, 5046 vessels, of 14,313,515 tons. In the coasting trade, there were entered in 1912, 9133 vessels, of 10,342,888 tons; and cleared 9852 vessels, of 12,535,309 tons. Of the steamers entered in the foreign trade, 2355, of 7,396,697 tons, were British; 1685 steamers, of 5,788,339 tons, German; 759, of 1,056,153 tons, Chilean.

At the end of 1912, the merchant marine included 149 vessels, of 83,070 tons; of which, steamers numbered 83, of 51,167 tons.

Communications. At the end of 1912, there were in operation, as officially reported, about 8000 kilometers of railway. This figure includes the Bolivian section of the Arica-Alto de La Paz line (233 kilometers) and the Bolivian section of the Antofagasta-Oruro line (482 kilometers). Some details are shown below:

	Km.	*Receipts* [a]	*Expenses* [a]
Arica à La Paz [b]	489.5 [c]	845	1,054
Longitudinal Norte y Sur [b]	1,320.0	668	1,800
Aislados del Norte [d]	994.0	1,900	2,249
Red Central	2,286.4	37,034	42,475
Regional de Chillán à Pinto	35.0	64	73
Regional de Ancud à Castro	97.0	18	54
Private lines	2,872.0	38,812	22,384
Total	8,044.2 [e]	78,832,	70,089

[a] Thousands of pesos gold. [b] For year 1913. [c] Of which, 233 km. in Bolivia. [d] Of which, 482 km. in Bolivia. [e] 4998 miles, of which 444 in Bolivia.

On the Trans-Andine Railway, which was one of the most costly and difficult to build, there was experienced a severe winter, and the first mail train was operated only on August 20, no passenger trains having passed over that railway since the end of May, and the international train from Chile to Buenos Aires was suspended. The Howard Syndicate notified the Chilean government that it would make delivery of the Southern Longitudinal Railway on August 1. It was stated that there was danger of a general railway strike in Chile, owing to the dismissal of a number of employees on the State railway.

Towards the end of the year the Chilean government notwithstanding its limited financial resources determined to proceed with the construction of the following new lines: Paine to Talagante; a line to connect the Traiguen branch with the main line; the Iquique and the Antofagasta extensions to the Longitudinal Railway; a line from Melpilla to Las Cabras; Valparaíso to Casablanca; San Vicente to Perallilo and Parronal; Valdivia to Los Canelos; Freire to Cunco; Los Angeles to Santa Barbara and Quillaco; San Clemente to Colorado, with a branch to Queri; San Bernardo to Puente Alto; Quilpe to Melipilla; San Carlos to San Fabian; Artificio to Quincolmo; El Alamo to Molina; Cauquenes to Chanco; Quirihue to Coelemu; Yumbled to Rio Claro; Bulnes to San Ignácio and thence to El Recinto.

In 1912 State telegraph offices numbered 364, with 15,501 kilometers of line and 29,015 kilometers of wire; offices of the State railways, 277, with 5319 kilometers of line; offices of private lines, 139, with 4847 kilometers of line and 14,409 kilometers of wire. In all, there were 780 telegraph offices, with 25,667 kilometers of line, 1595 telegraphic instruments, and 2466 employees. There are several radiotelegraph stations. Post offices in 1912 numbered 1114.

Finance. The monetary unit is the peso. The peso gold is equivalent to 18 pence, or about 36.5 cents; the paper peso fluctuates in value. Accounts of revenue and expenditure are kept partly in pesos gold and partly in pesos paper. Reduced to gold value, revenue and expenditure are stated as follows, in thousands of pesos:

	1901	*1906*	*1911*	*1912*	*1913*
Revenue	105,848	165,721	197,502	221,832	209,788
Exp'diture	120,282	142,429	199,014	235,127	216,487

For 1913 the ordinary revenue is stated at 96,752,728 pesos gold and 164,950,825 pesos paper; ordinary and extraordinary, 97,165,452 gold and 207,908,819 paper. The expenditure corresponding to the budget for 1913, is stated at 50,335,966 pesos gold and 266,914,989 pesos paper; the total expenditure made in 1913, 78,526,991 gold and 254,695,833 paper. Of the 1913 revenue, the sum of 90,683,769 pesos gold and 61,269,987 pesos paper was derived from customs; of the gold revenue, export duty on sodium nitrate furnished 90,128,621 pesos. The budget for 1914 showed estimated expenditure by ministries as follows: interior, 549,399 pesos gold and 53,635,441 pesos paper; foreign affairs, 1,510,146 and 4,722,708; justice, 10,651,649 paper; public instruction, 344,118 gold and 38,993,906 paper; finances, 60,401,310 and 18,040,995; war, 451,172 and 39,612,402; marine, 35,736,518 and 18,828,026; industry and public works, 221,256 and 25,367,552; railways, 22,554,664 and 42,774,288; total, 121,768,583 pesos gold and 252,626,967 pesos paper.

Public debt, Dec. 31, 1913: external, £33,912,340 (452,164,533 pesos gold); internal, 155,622,535 pesos gold and 32,920,839 pesos paper. Paper money in circulation at end of 1913, 183,822,354 pesos.

Army. An active army, in reality a national militia, is maintained and by law all citizens from the ages of 18 to 45 are liable to service, though only about 20,000 are actually in service. The recruits are summoned to the colors in their twentieth year and are trained for one year, after which they serve nine years in the reserve of the active army, and the remainder of the time in the second reserve which is organized as a second line army and in time of war would bring the total strength up to about 80,000 men. Each of the four military districts into which the country is divided furnishes a division on mobilization. There are 48 battalions of infantry, 8 regiments of cavalry, 2 batteries of horse artillery, 32 batteries of field artillery, 8 batteries of mountain artillery, 2 battalions of fortress artillery, and 8 battalions of engineers.

Navy. The Chilean navy, as reported for 1914, included the following: three battleships, aggregating 19,016 tons; one armored cruiser and four protected cruisers, 21,468 tons; two torpedo cruisers, 1474 tons; six torpedo-boat destroyers, 4553 tons; five torpedo boats, 728 tons; three transports, 30,565 tons; and several auxiliary vessels. Personnel, 515 officers and 6284 men. There were under construction in 1914 two dreadnoughts, aggregating 56,000 tons; two submarines, 610 tons; four torpedo-boat destroyers, 7200 tons.

GOVERNMENT. The legislative power rests with a congress of two houses, the Senate (36 members, elected for six years) and the Chamber of Deputies (118 members, elected for three years). The chief executive is the President, who is elected by indirect vote for five years and is ineligible for the next term. He is assisted by a responsible ministry and by a council of State, which includes five members nominated by himself and six chosen by the congress. The President in 1914 was Ramón Barros Luco, who was inaugurated Dec. 23, 1910.

HISTORY. The Congress was called in special session in May, for the purpose of voting a bill for the conversion of the paper *peso*. The bill provoked an unexpectedly long debate and was still under discussion when the special session gave place to the regular session on May 31. The presidential message, delivered at the opening of Congress, contained the affirmation that, after wiping out previous deficits, the ordinary revenues (374,000,000 *pesos* or $75,000,000) would leave a surplus of 34,000,000 *pesos* ($7,000,000) to be expended on public works. For questions arising in regard to the preservation of Chilean neutrality during the war consult the article on the WAR OF THE NATIONS. For Chile's part in the attempted mediation of the Mexican question, consult the article on MEXICO, *History*. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

CHINA. Formerly the Chinese Empire; since Jan. 12, 1912, the Chinese Republic, following a successful revolution ended by the abdication of the infant Emperor. Capital, Peking.

AREA AND POPULATION. The republic is composed of China proper, or "the 18 provinces," Manchuria (three provinces), Sinkiang province (including East Turkestan), and Mongolia and Tibet (dependencies). Outer Mongolia was recognized as autonomous in 1913. The population is unknown. Of China proper there have been many censuses or government estimates, based upon enumeration by households. The computation is made by multiplying by the average in a household, exclusive of children under six years of age. In the table below the area is given in square miles by provinces, with the census taken in 1910, and the 1912 estimates of the Maritime Customs:

	Sq. M.	*Census '10*	*M. C. Est.*
Anhwei	54,826	14,077,688	36,000,000
Chekiang	36,680	13,924,655	11,800,000
Chihli	115,830	22,970,654	29,400,000
Fukien	46,332	8,555,678	20,000,000
Honan	67,954	22,375,516	*
Hunan	83,398	20,583,187	22,000,000
Hupeh	71,428	21,256,144	34,000,000
Kansu	125,483	3,807,883	*
Kiangsi	69,498	16,254,374	24,534,000
Kiangsu	38,610	15,379,042	23,980,000
Kwangsu	77,220	5,426,356	8,000,000
Kwangtung	99,970	23,696,366	32,000,000
Kweichow	67,182	9,266,914	*
Shansi	81,853	9,422,871	*
Shantung	55,984	25,813,685	38,000,000
Shensi	75,290	6,726,064	*
Szechwan	218,533	54,505,600	78,711,000
Yunnan	146,718	8,049,672	7,571,000
China proper	1,532,789	†302,111,334	420,996,000
Heilungkiang	202,703	1,562,254	....
Kirin	105,019	5,349,287	....
Shengking	54,761	5,830,819	....
Manchuria	362,483	†12,742,360	17,000,000
Sinkiang	550,579	†1,768,560	
Tibetan Marches (of Szechwan and Yunnan)	......	195,496	
Children under six years (est.)	......	9,000,000	
Total provinces	2,445,851	325,817,750	
Mongolia	1,076,292	1,800,000	(?)
Tibet ‡	756,000	2,000,000	(?)
Grand total	4,278,143	329,617,750	

* Honan, Kansu, Kweichow, Shansi, and Shensi, 55,000,000. † Not including children under six years. ‡ Including Koko-Nor and Tsaidam.

For the census taken in 1910 the enumeration by households differs in different provinces, averaging from 3.1 to 5.8; in Chihli it was 5.5, but in Peking city 5.8. In some provinces the average was not ascertained, or at any rate not published. The mean of the ascertained averages was 4.8, and this figure was used in calculating the population of provinces for which no specific average is given. The problem is further complicated by incomplete returns from Shansi and Szechwan. The figure for the latter given in the table is not shown by the census, but is the number reported by the viceroy to the Peking authorities. The population figures for China proper, excepting the one for Szechwan, are those published in 1912 by W. W. Rockhill, the late American minister at Peking, in his monograph interpreting the 1910 census; he concludes that, although the new information furnished by the 1910 census is insufficient for definite conclusions, it tends to confirm the opinion that the population of China is much smaller than we have been led to believe and that in the last century it has increased only slowly if at all. The annual estimates of the Maritime Customs as given above for 1912 are widely quoted; but in respect of more than half of the provinces they are undoubtedly greatly exaggerated, being based on no known authority.

According to a census undertaken by the Minister of the Interior in 1912, Peking had an estimated population of 692,500. The 1910 census gives Peking a population of 805,110, of whom adult males numbered 500,819, adult females 256,638, and children between the ages of 6 and 16, 47,653. Estimating the proportion of infants under six at 2 per cent, the total of all persons in Peking would be about 821,000. The population of the larger treaty ports following is taken from the Maritime Customs estimate, which are probably more nearly accurate than those for the provinces: Canton, 900,000; Hankow, 826,000; Tientsin, 800,000; Shanghai, 651,000; Foochow, 624,000; Chungking, 598,000; Soochow, 500,000; Ningpo, 350,000; Hangchow, 350,000; Nanking, 267,000; Changsha, 250,000; Chinkiang, 184,000; Antung, 161,000; Wuhu, 122,000; Amoy, 114,000; Wenchow, 100,000; Shasi, 90,000; Swatow, 66,000; Kongmoon, 62,000. An estimate of the custom's authorities in 1912 returns the number of foreigners resident in China at 144,754, of whom 75,210 were Japanese, 45,908 Russian, 8,690 British, 3869 American, 3133 French, 2817 German, 2785 Portuguese, and 2342 other nationalities.

Education. During the year 1910 the reorganization and development of the educational system was projected and the contemplated establishment of a university at Peking was carried out. Occidental learning begins by degrees to replace the ancient system, which was limited almost entirely to the study of Chinese classical literature. The imperial edict of Sept. 3, 1905, abolished the system of examination in the classics as the only passport to State employment. New schools are opened daily, and because of the lack of scientific text-books in the vernacular, the study of Japanese and European languages has become an imperative necessity. Old style schools, whose curriculum is confined practically to the Chinese classics, still exist in sufficient numbers so that the traditional type of education is not yet extinct. There are several medical schools. The Imperial University (Peking) and the university at Tientsin have a European and Japanese staff in addition to Chinese professors. A new university at Hankow is projected. There are over 300 daily, weekly, or monthly journals in the country.

The creeds acknowledged by the Chinese are Confucianism, Buddhism, and Taoism. Temples of all creeds numbered, according to the police report at end of 1908, 1049, with 1553 Buddhist priests, 133 Taoist priests, and 102 nuns; students 934, servants 975, and lodgers in temples 15,445. Ancestor worship is everywhere observed. Mohammedans number about 30,000,000, principally in the Northwest. There are about 1,000,000 Roman Catholics, and many Protestant sects have missions throughout the country. Nature worshipers still exist in the hill regions of the interior.

Industries. Agriculture is the leading industry, though the country is rich in minerals. In the North the principal crops are wheat, barley, corn, millet, and other cereals, and beans and peas; in the South, rice, sugar, indigo, and cotton are grown. In the South and West tea and silk cocoons are important products, and sericulture is carried on in all the provinces. About 27 per cent of the world's supply of raw silk comes from China. Large quantities of opium were formerly produced, but the output, as well as the importation from India is being greatly restricted, pursuant to government decree. Szechwan has been a large producer of opium, but since the agreement between China and Great Britain (May 8, 1911) to suppress both native production and Indian import, Szechwan has substituted wheat for poppy cultivation, and promises to regain her position as one of China granaries. The government of India has agreed that the export of opium from India to China shall cease before 1917, conditionally upon the establishment of absolute proof of the nonexistence of poppy cultivation throughout the republic by that date. No Indian opium is to be conveyed into any Chinese province which has succeeded in suppressing cultivation. Smuggling over the Southern border, however, still goes on, and in 1912, owing to the disturbed state of the country and the inability of the new government at Peking efficiently to enforce the law in the provinces, the area under poppy cultivation greatly increased, entailing much friction between the Chinese and British governments.

The mineral wealth of the republic is very great, and its coal deposits are known to be among the richest in the world; but their exploitation is comparatively insignificant. Of the minerals worked, the more important are tin (in Yunnan), iron, antimony, lead, zinc, copper, and salt. The iron works at Hanyang, near Hankow, were seriously damaged during the revolution of 1911. Although many mining concessions have been granted to foreigners, the opposition of provincial or other authorities has effectually prevented their development.

Cotton, silk, and wool are the leading manufactures. A total of 34 mills was reported Jan. 1, 1912, with 932,506 spindles and 4635 looms. Flour and rice mills are being erected at the large centres. The silk trade has been injured by the substitution in European markets of inferior imitations.

Commerce. In the table below are shown values in haikwan, or Maritime Customs taels, of imports general and special (for consumption) and exports general and special (Chinese produce) for successive years:

		1910	*1911*	*1912*
Imps.	gen.	476,553,402	482,576,127	485,726,000
Imps.	spec.	462,964,894	471,503,943	473,097,031
Exps.	gen.	394,421,836	388,410,350	382,949,000
Exps.	spec.	380,833,328	377,338,166	370,520,403

Details of the 1912 imports for consumption and exports of domestic produce are given in the table below, with values in thousands of haikwan taels.

Imports	*1000 t.*	*Exports*	*1000 t.*
Cotton textiles	81,425	Raw silk	76,789
Cotton yarns	62,664	Beans, etc.	41,206
Opium	47,707	Tea	33,778
Petroleum	24,846	Cotton	17,252
Sugar	24,086	Silk Mfrs.	17,018
Flour	12,694	Skins	15,196
Tobacco	12,425	Oils	15,046
Rice	11,660	Sesame	11,966
Dyes	11,462	Tin	11,711
Fish	10,551	Straw goods	7,644
Iron	8,806	Wool	6,868
Coal	8,221	Wheat	6,258
Arms, etc.	7,748	Cattle	5,555
Matches	6,985	Matting	3,770
Leather	6,414	Tobacco	3,761
Machinery	5,792	Silks	3,741
Paper	4,304	Peanuts	3,599
Sacking	4,156	Meats	3,384
Timber	4,042	Coal	3,362

Of the total tea export (197,559,867 pounds in 1912), 12,771,733 pounds went to Hongkong, 13,054,000 pounds directly to the United Kingdom, 62,997,466 pounds to Russia and Siberia, and 21,008,266 pounds to the United States. The trade with Hongkong is principally transit, the imports into China from Hongkong being chiefly from Great Britain, and the exports from China to Hongkong being intended for re-shipment to European and other countries. The principal countries of origin and destination in the 1912 trade follow, with values in thousands of haikwan taels: Hongkong, 147,801 imports and 103,384 exports; Japan, 91,017 and 45,262; United Kingdom, 74,856 and 15,900; British India, 46,646 and 7,573; United States, 36,198 and 35,050; Russia, 21,232 and 55,197; Germany, 21,130 and 14,339; Belgium, 8,751 and 6,555; Straits Settlements, 8605 and 6339; Macao, 6408 and 4573; Dutch East Indies, 6048 and 1613; French Indo-China, 3319 and 1497; Korea, 3155 and 5443; France, 2932 and 38,809; Austria-Hungary, 2275 and 1873; Canada, 1111 and 885; Netherlands, 982 and 7615; Italy, 486 and 10,843; other countries, 2774 and 7770; a total of 485,726 imports and 370,320 exports in the special trade. Re-exports, 12,629; resulting in total net imports 473,097 and gross exports 382,949. In addition to the oversea trade, the republic has an extensive coasting and river traffic, carried on by British and other foreign vessels as well as by native craft.

Shipping. Vessels entered and cleared in the 1912 foreign trade are shown in the table below according to nationalities:

	Entered		*Cleared*	
	No.	*Tons*	*No.*	*Tons*
British	4,944	4,930,821	5,084	5,185,716
Japanese ...	2,140	2,991,411	2,096	2,960,345
German	710	1,310,494	745	1,467,958
French	476	599,589	474	575,807
American ..	256	262,178	248	255,254
Norwegian ..	240	242,878	250	250,802
Russian	105	198,777	111	218,511
Chinese	25,466	50,859,991	25,111	2,002,961
Total* ...	34,543	12,847,881	34,267	18,228,601

*Including other.

Included in the merchant marine in 1912 were 68 vessels of 100 tons and over, with an aggregate net tonnage of 90,420.

Communications. Railways reported open to traffic at the beginning of 1912 had a total length of 5822½ miles inclusive of Russian and Japanese lines in Manchuria; inclusive of lines on which work had been begun (though subsequently suspended or abandoned); there were reported as under construction, 2202 miles. At the beginning of 1914 there were reported to be 5960 miles open to traffic and 2273 under construction. An edict providing for the reversion to government control of all trunk railway lines was issued in 1911. This edict was promulgated May 9, 1911, and did much to contribute to the unrest that exploded in the rebellion of the following October.

In 1914 in the Province of Shantung there were two railways in operation, built of standard gauge: the Shantung railway from Tsingtau to Tsinanfu, 256 miles, and the Tienstin-Pukow line, 690 miles long, traversing the western portion of the province. The former was German owned and operated. The latter was divided into two sections; the northern (457 miles long and built by the Germans), ran from Huschowfu on the southern border of Shantung to Tientsin; the southern section, built by the British, but in common with the northern section operated by Chinese, is 235 miles long and extends from Huschowfu south to Pukow on the Yangtze River. The Chinese government administered both sections as an undivided government railway, with a European engineer and commission. The Shantung Railway was taken possession of by Japan early in October and remained under her control during the year, notwithstanding Chinese efforts to prevent it.

The Russian diplomatic agent in Mongolia signed an agreement in Kyachta, on September 17–30, with the Urga government, which recognized the right of the Mongolian government to build railways within its own territory, and approves the policy of coöperation with the Russian government and Russian lines, with certain concessions to the latter country.

Considerable commercial and political importance was attached to the right to construct the railway from Blagoveshchensk, on the left bank of the Amur River, to Aigun, Mergen, and Harbin, with a connection between Mergen and Tsitsihar, secured by Russia from China. This taps large and rich tracts of territory, and gives access to the Amur River and the new Amur Railway, on the left bank of the river, and binds this region to Russia, giving her a railway connection and dominance over the whole of Northern Manchuria, as she owns the line from Vladivostok through Manchuria to Russia, and had nearing completion the railway traversing Russian territory from Vladivostok north of the Amur to Karimska, where it joins with the Siberian Railway. The new railroads would enable Russia to put Harbin in immediate control of the trade approaches to the large territory of the Amur, and give her the northern section of the projected line from Chinchow to Aigun. The right to build the Chinchow-Aigun Railway was secured from China by Americans, but the southern half of it was granted to Japan by China, and the northern section secured during the year by Russia.

In 1914 it was reported that more provinces in China were engaged in railway construction than at any previous time. The Board of Communications and the British and Chinese Corporation, Ltd., during the year signed an agreement for the construction of some 600 miles of railway from Nanking to Nanchang and Ping Siang, where it would connect with the Ping Siang and Changsha and Hankow-Canton Railways. This line it was thought would materially strengthen British interests along the Yangtze-Kiang, especially in connection with the Pukow-Sinyangchow Railway. This new line was to connect with Hangchow and Shanghai, and also with a line from Nanchang to Wuchang, so that there would be an aggregate length of nearly 1000 miles, to be built and operated under British auspices and from British materials.

Army. Little progress was reported during 1914 in the reorganization of the Chinese army, which was interfered with by the rebellions occurring after the Revolution of 1911. The governing scheme was that of the edict of 1912, providing for the recruitment and formation of a model army on European lines, consisting of 36 divisions, each of about 10,000 combatants. While conscription is reserved, the army is nominally formed by volunteers who are in active training for three years. The organization is far from cohesive though there are some well drilled units, and few military critics in 1914 would hazard an estimate of the strength of the forces, one authority stating the peace establishment at an uncertain 150,000 men which on a war basis could be raised to some 200,000. At any rate during the troubles of 1914 the Chinese government did not essay to use its military strength in the enforcement of neutrality.

Navy. A plan for the reorganization and reconstruction of the Chinese fleet was under discussion at the beginning of 1914, between the Chinese government and the British admiralty, whereby British officers would be lent to China on much the same terms as they are now lent to Greece. Aside from small craft, the only serviceable vessels are several cruisers, and none of these is an armored ship. Four of them (one of 4300 tons and three of about 300 tons each), were built in 1897 and 1898. The fifth, the

Ying Swei, of 2400 tons, was launched at Barrow in July, 1911, and the sixth, the *Chao Ho*, of 2400 tons, at Elswick in the following October. Both vessels were completed in 1912. A seventh cruiser, of the same type as the *Ying Swei*, was launched at the yard of the New York Shipbuilding Company in May, 1912, and in that year three gunboats, of 780 tons each, were built in Japan, and two smaller ones at Kiel. At the end of 1913 two destroyers were building, one at Elbing and one at Triest. There is a considerable number of torpedo boats, river gunboats, etc., of which not more than half the torpedo boats are fit for action. Of the four destroyers (built 1898–99), captured in 1900 by the allies, Great Britain, France, Germany, and Russia each obtained one.

FINANCE. No estimates of revenue and expenditure are published as in other countries; calculations, based upon imperfect data, recently placed the revenue at 297,000,000 taels and the expenditure at 576,000,000 taels. The Imperial Maritime Customs, with a large staff of foreign and Chinese subordinates, is the controlling service, under the direction of an inspector-general (British), F. A. Aglen in 1914; so long as British trade predominates, this post is to be held by a subject of Great Britain. His powers have not been materially affected by the transfer in May, 1906, of the department from the Foreign Board to the Board of Revenue, when two Chinese administrators-general were appointed. Besides the collection of dues at treaty ports, the department directs their lighting and navigation and maintains a small fleet of cruisers to enforce its regulations. The department formerly controlled the post office, but this was transferred in 1911 to the ministry of communications. The receipts from maritime customs in 1912 were returned at 35,526,495 taels, and from opium likin at 4,424,117.

The Haikwan, or maritime customs tael, fluctuates with the price of silver; it was worth about 79 cents in 1907, 65.5 cents in 1908, 63.4 cents in 1909, 66 cents in 1910, 65 cents in 1911, 75.3 cents at the end of 1912, 72.3 cents at the end of 1913. By a government decree promulgated at Peking Feb. 10, 1914, a new currency system was introduced whereby a coinage will be substituted for the various and sundry coins and sycee now in use and representing the basis of the various issues of paper currency by the several Chinese provinces. Under the mandate only the central government at Peking can now mint coins. The new currency will be on the decimal system; the unit will be the yuan, or dollar, which is to be of 72 candaroons of 90 per cent silver and 10 per cent copper; the actual quantity of pure silver is fixed by the mandate at 23.97795048 grams. The four silver coins are the yuan, the half-yuan, the 20-cent piece, and the 10-cent piece. There will be one nickel coin, the 5-cent piece, and five kinds of copper coins—the 2-cent, 1-cent, 5-li, 2-li, and 1-li pieces. The values are in decimal progression; one-tenth of a yuan is the chio, or 10-cent piece; one hundredth of a yuan is the fen, or 1-cent piece; one-thousandth of a yuan is a li. The half-yuan will contain 70 per cent of pure silver and the other silver coins the same. The half-yuan will contain 9.583777 grams of pure silver, the 20-cent piece, 3.72990248 grams, and the 10-cent piece 1.86495124 grams.

GOVERNMENT. The last reigning Emperor of the Manchu dynasty which began in 1644, was Pu-yi (reign title, Hsun-t'ung), who was born Feb. 11, 1906, and succeeded his uncle, Tsai-t'ien (reign title, Kuang-hsu), who died Aug. 14, 1908. His father, Prince Chun, was regent. Pu-yi abdicated Feb. 12, 1912, and a republic was established, which was recognized by the United States May 2, 1913, and by the other powers Oct. 6, 1913. Yuan Shi-kai was declared provisional President Feb. 15, 1912, and was elected (Oct. 6, 1913) and inaugurated (October 10) as the first constitutional President, for the term 1913–19, with General L. Yuan-hung as Vice-President. The presidential office is open to men of at least 40 years of age, who have resided in the country for 10 years. There is a legislative Assembly composed of an Upper House of 274 members, elected by the provincial assemblies and various electoral colleges for six years, one-third retiring every two years; and a Lower House of 596 members, elected by restricted manhood suffrage. A political council of 71 members met first on Dec. 15, 1913, to discuss an appointment of another council to draft a constitution and to advise the government on administrative measures.

The ministry (August, 1913) was composed as follows: premier, Hsu Shih Ch'ang; minister of finance, Chou Tzu Ch'i; foreign affairs, Sun Pao Ch'i; education, T'ang Hua Lung; war, Tuan Ch'i-Jui; justice, Chang Tsung Hsiang; interior, Chu Ch'i Ch'ien; agriculture and commerce, Chang Ch'ien; communications, Liang Tun Yen; navy, Liu Kuan-Hsiung.

HISTORY

YUAN SHI-KAI'S CONSERVATIVE REFORMS. The events of the year 1914 made it more than ever apparent that since the successful Revolution of 1911 a powerful reaction had set in. In their campaign against President Yuan Shi-kai, whom they disliked both for his conservatism and for his domineering attitude, Dr. Sun Yat-sen and other radical republicans had brought about the abortive July Rebellion of 1913, which was as unfortunate for China as it was disastrous for themselves; while the radical republicans in Parliament by too stubbornly opposing the President's policies had prevented the National Assembly from accomplishing any solid constructive work, and thus provoked Yuan Shi-kai to issue the famous mandate of Nov. 5, 1913, which dissolved the *Kuo Ming Tang* (or radical-republican, anti-presidential party) and deprived its members of their seats in the National Assembly. The remaining members of the National Assembly lingered forlornly in Peking until that ill-starred body—China's first parliament—was formally dissolved on Jan. 12, 1914. The new year, therefore, found Yuan Shi-kai substantially in possession of dictatorial power, with a free hand to work out his own policy of conservative progress. The Chinese people, he held, were not violently to be wrenched from their ancient customs by an impatient group of inexperienced enthusiasts, but were to be prudently conducted along the path of progress by a strong and a wise government. The presidential authority, according to him, must be strong enough to command the respect of foreign nations and to compel the obedience of domestic disturbers; it must be wisely exercised to maintain the balance between conserror-stricken provinces, although Yuan Shi-kai was bitterly reproached for not putting an end to this outrage. In March and April it was reported that fifty thousand government troops were pursuing White Wolf in the Province of Shensi; but always he eluded the hostile armies, and, crossing over into Kansu, continued his devastating career. At Taochow, on June 1, thousands of the populace were killed. But at last, on August 5, White Wolf was killed near Hsuchow (in Honan) by a Chinese officer who received $50,000 reward; White Wolf's followers were now easily dispersed; and comparative quiet was restored. The White Wolf movement had been the most serious disturbance of the year, but minor mutinies had occurred at Kalgan, on June 24, at Chenchow (in Honan), on July 13; there had also been many symptoms of unrest in Nanking and Canton; and on the border of Kiangsu and Shantung had appeared a new secret order of "All Buddhist Boxers."

MONGOLIA. In December the palace of the Hu-tuk-tu, with many sacred objects of great value, was entirely destroyed by fire.

INTERNATIONAL RELATIONS. The Mongolian question, which had approached a critical stage in 1913, owing to the support given by Russia to Outer Mongolia's desire for independence, continued to agitate Chinese opinion, but not so acutely. To be sure, a band of Outer Mongolians made an incursion in January into Inner Mongolia (Inner Mongolia was still under Chinese control, whereas Outer Mongolia had become virtually an independent principality under Chinese suzerainty in 1912), approached to within 100 miles of Kalgan, and killed the local chieftain who was loyal to China. It is true also that in April the self-styled "Imperial Mongolian government" addressed a despatch to British, French, American, and German ministers requesting that their respective governments send to Urga consuls or other representatives to conclude treaties of friendship and commerce with Outer Mongolia. But this time the Mongolians received no encouragement from Russia. In May the Russian foreign minister announced before the Russian Duma that Russia had withdrawn her troops from Chihli Province, as a mark of confidence in Yuan Shi-kai's government, and that the Urga Mongolians, overconfidently counting on Russia's favor, were foolishly attempting to wrest from China Inner Mongolia as well as Outer Mongolia. It will be remembered that the main points at issue between Peking and Petrograd had been settled by the Russo-Chinese treaty of Nov. 5, 1913, which had recognized Outer Mongolia as an autonomous province under the suzerainty of China; various minor questions, however, remained to be settled, and the boundary was not yet definitely determined. A tripartite conference was therefore arranged at Kiakhta between delegates of Russia, China, and Outer Mongolia. On September 9 the delegates came together for the first time.

Quite similar to the Khiakta Conference was the Simla Conference, to which Chinese, British, and Tibetan representatives had been called late in 1913, for the purpose of discussing the question of Tibetan autonomy and delimiting the boundary of Inner and Outer Tibet. Over Outer Tibet China was to retain only a shadowy kind of suzerainty. From the outset the Tibetan negotiations were made difficult by the unwillingness of the Chinese government to concede what the British and Tibetan envoys demanded; and the conference almost met shipwreck on the fatal question, how much of Tibet was to be included in Outer Tibet. Stubbornly the Chinese refused to give up Kokonor, the Marches of Tibet, and Chiamdo, which the British wished to incorporate in autonomous Outer Tibet. So serious was the conflict of opinion on this point that on July 10 Sir Edward Grey, the British Minister of Foreign Affairs, darkly hinted that the consequences would be disastrous for China if the Pekin government should refuse to ratify the agreement finally reached by the Conference.

The opium question, so long a source of difficulty between China and Great Britain, was in 1914 comparatively quiescent, seeming at last to have reached that stage where the Chinese government would be allowed to carry out its campaign to suppress the deadly opium traffic, without hindrance from the British authorities. In the course of a discussion on this topic in the British House of Commons, Mr. Theodore Taylor alleged that in 14 or 15 out of the 22 provinces of China, opium was neither produced nor imported; into 3 provinces opium could still be imported from India; but by the end of the year, it was hoped, the poppy would be cleared out of every Chinese province, and Great Britain would no longer have any excuse to force her opium on the Chinese. Mr. Taylor cited many instances where Chinese officials had publicly burned large stocks of opium, and had shot Chinese farmers who dared to cultivate the poppy.

A few shots fired at the Russian ship, *Napoleon*, in the Ussuri River in June occasioned an interchange of notes between the Chinese and Russian governments, but led to no serious altercation. Sao Ke Alfred Sze was appointed Chinese Minister to Great Britain, and Hsia Chia-fu to the United States. Professor Willoughby of Princeton University was appointed to succeed Professor F. J. Goodnow as foreign adviser on constitutional matters. In February the French *Banque Industrielle de Chine* negotiated a concession involving the construction of 1000 miles of railway from Kamchow to Chungkiang and the flotation of a twenty million dollar loan. The French also received an extension of their Concession at Kwangchauwan, the *de facto* administration of adjacent regions by the French authorities being formally recognized in July. A group of Belgian financiers on July 27 signed a preliminary agreement to construct 1850 miles of railway from Lanchowfu to Kuldja. The Standard Oil Company obtained a concession to exploit the oilfields of Shensi and Chihli provinces for 60 years, the Chinese government to receive five per cent of the crude product. In July, Yuan Shi-kai sanctioned the opening of Chingmen in Fokien as a treaty port.

CHINA AND THE WAR. The War of the Nations, in which Japan, as well as most of the European countries, was involved, affected China closely, in spite of her neutral position. At the outset, Yuan Shi-kai hoped that the Far East might not become a theatre of war, for a conflict on Chinese soil might prove worse than embarrassing for China. He therefore early declared China's neutrality, instructed the provincial and military authorities to maintain an attitude of irreproachable impartiality, and appealed to President Wilson to urge the limitation of the war to Europe. The dismantling of several British gunboats at Hankow was but one of many instances showing the sincerity of China's neutrality. But the entry of Japan into the conflict (see WAR OF THE NATIONS) put China into a very delicate and difficult position. The Japanese ultimatum had called upon Germany to surrender the German leased territory of Kiaochow to Japan "with a view to the eventual restoration of the same to China." And it seemed to be clearly understood at Washington that Japan intended to return Kiaochow to China, safeguard the integrity of the Chinese Republic, protect the commercial privileges of the various Powers in China, and act in accordance with the "equal opportunity" principle of the Anglo-Japanese Alliance. Such action would doubtless have been on the whole favorable to China, and welcome. But from the first, the Chinese distrusted the motives which sent a Japanese expeditionary force to capture the German stronghold of Tsingtao; and distrust deepened into bitterness when the Japanese began to land troops at Lungkow, outside of the German concession, thus violating China's neutrality. While resentfully protesting, the Chinese government was too weak to oppose Japan by force; and on September 3 the Foreign Legations at Peking were informed that China would maintain her neutrality except in the area between Lungkow on the North and Kiaochow Bay on the South. Germany and Austria-Hungary remonstrated against the extension of the war zone outside of the German Concession, but the Chinese government simply disclaimed responsibility. As the operations against Tsingtao progressed, China had additional cause for complaint against Japan. The Chinese Press indignantly accused the Japanese invading army of seizing supplies without due compensation, of intruding upon private homes, of seizing the Customs House at Lungkow in order that Japanese merchandise might be admitted duty-free, and of needlessly occupying the railway stations at Weihsien and at Tsinanfu on Chinese territory. Still more aggravating was the opinion freely expressed in Japanese journals, that since Germany had forced Japan to fight for Tsingtao, Japan was no longer bound to hand over to China the territory for which Japanese soldiers had shed their blood. Japan must retain Kiaochow as compensation for her exertions. This was what Chinese opinion anticipated.

The war had also an important bearing upon Chinese finance. During the summer, just before the war broke out, the Chinese government had been counting upon a loan of $40,000,000 from the Quintuple group of international bankers, but then the war intervened, cancelling loan projects and cutting down the customs revenues. On August 10 the Chinese government requested the Powers, in consideration of the war, to allow a postponement of the payments due to foreign governments (on the Boxer indemnity) and banks. In September the situation assumed a brighter aspect. A domestic loan of $26,000,000 found ready subscribers in China, and the August installments of the Boxer indemnity were paid. Moreover it was rumored that a loan of $50,000,000 had been negotiated with Messrs. Samuel of London, and that Wang Ching-fang and Tsai Shu-tung had been sent to the United States on a financial mission. Upon the issue of these negotiations, and upon the ability of Yuan Shi-kai to utilize China's own financial resources, much depended; for without money to discharge its obligations, and without funds to pay the troops, Yuan Shi-kai's government could not hope long to continue in power. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

CHINA FLOOD PREVENTION. See FLOOD PREVENTION.

CHINESE IMMIGRATION. See IMMIGRATION and EMIGRATION.

CHOLERA. See INSECTS AND PROPAGATION OF DISEASE; VITAL STATISTICS.

CHORAL SOCIETIES. See MUSIC.

CHOSEN. See KOREA.

CHRISTIAN ENDEAVOR, UNITED SOCIETY OF. During the year 1914 the Christian Endeavor Week was inaugurated. This is the first week in February and it is a time for review and recruiting, and out of it has grown the "Help Out Church" movement, a definite effort to apply the power and enthusiasm of young people to the solution of problems of the church. During the year, also, the "Life Work Recruits," a movement to enlist young people for the ministry, missions, and other forms of definite Christian service, was developed, and nearly 1000 members were enrolled. The society through its State and district unions made the "Go-to-Church Sunday" a national movement, and largely contributed to its success. The society increased in number and effectiveness as a result of the efficient methods, which are applied with the same directness and system as in a business establishment. The society numbers over 4,000,000 members, with 75,000 different societies and 80 denominations.

CHRISTIANS. The total number of communicants in this denomination in 1913 was 112,902. The churches numbered 1182 and the ministers 1129. The highest representative body is the American Christian Convention, made up for the most part of delegates from the conferences. This organization has supervision of the general work of the denomination. The denomination maintains several schools and colleges, including the Union Christian College in Indiana, Defiance College in Ohio, Starkey Seminary in New York, Elon College and Franklinton Christian College (colored) in North Carolina, Palmer College and Weaubleau College in Missouri, and Jireh College in Wyoming. It has also a theological school, the Christian Biblical Institute, in Ohio. Missions are conducted in Japan, Porto Rico, continental United States, and Canada. Periodicals are the *Herald of Gospel Liberty*, the *Christian Sun*, and the *Christian Vanguard*.

CHRISTIAN SCIENCE. The most notable event of the year 1914 in the development of the Christian Science movement was the announcement by the trustees, under the will of Mary Baker Eddy, of their plan for using the income of her estate for the purpose named in her will. Mrs. Eddy bequeathed the bulk of her estate to be held and administered by trustees, with the provision that the income should be used for "more effectually promoting and extending the religion of Christian Science as taught by" her. The persons who were appointed to administer this trust are Archibald McLellan, Allison V. Stewart, John V. Dittemore, Adam H. Dickey, and James A. Neal,—directors of the First Church of Christ Scientist in Boston,—and Josiah E. Fernald, a banker of Concord, N. H., in whom Mrs. Eddy had shown confidence.

At the annual meeting of the Mother Church on June 8, 1914, the trustees announced that the income of her estate would be used chiefly as follows: 1. To contribute toward the expense of lectures given by Christian Science organizations outside the United States, Canada, and Great Britain. 2. To contribute toward the ever-increasing distribution of authorized literature throughout the world. 3. To contribute toward the establishment and maintenance of circulating or lending libraries of authorized Christian Science literature in connection with the denomination's churches, societies, reading-rooms, and Sunday schools. 4. To assist, in so far as is possible and practicable, in building church edifices.

The plan thus formulated has now been put into effect. Mrs. Eddy's work on Christian Science and her biography by Sibyl Wilbur were offered to public libraries throughout the United States and Canada, and furnished free of expense wherever accepted. Since the war began in Europe, large quantities of Christian Science literature have been supplied to the British fleet, German detention camps, various military hospitals, and to other places where participants in the war, reading English, German, or French languages, have been assembled. The trustees of Mrs. Eddy's will have also contributed to the expense of lectures in South Africa, New Zealand, Australia, China, the Philippine Islands, and Hawaii, these lectures having been delivered by members of the Christian Science Board of Lectureship, sent from the United States; other contributions have been devoted to the objects named in the plan to the extent of the income derived from Mrs. Eddy's estate. During 1914 the Christian Science movement, in number of adherents, number of churches, and in every respect, showed a steady and progressive development.

CHURCHILL, WINSTON S. See GREAT BRITAIN, *History, passim.*

CHURCH OF ENGLAND. See ENGLAND, CHURCH OF.

CHURCH BUILDING. See ARCHITECTURE.

CHURCH STATISTICS. See RELIGIOUS DENOMINATIONS.

CIGARS AND CIGARETTES. See TOBACCO.

CITRUS FRUITS. See HORTICULTURE.

CITY CHARTERS. See MUNICIPAL GOVERNMENT.

CITY GOVERNMENT. See MUNICIPAL GOVERNMENT.

CITY MANAGER. See MUNICIPAL GOVERNMENT.

CITY PLANNING. Of the realization of city-planning projects during 1914, passing mention may be made of (1) marked progress in widening Michigan Ave., Twelfth St., and Canal St., which with Chicago Ave., already 100 feet in width, form the "quadrangle" in the Chicago City Plan; (2) the carrying forward of the group plan of public buildings in Cleveland and of civic centres elsewhere; and (3) notable waterfront and railway improvements at Albany. Some details of city-planning commissions, the proposed Canadian Town Planning Act, a few competitions, and a projected American garden suburb follow.

PLANNING COMMISSIONS. One of the most encouraging features of the city-planning movement was the increasing number of official bodies commissioned to deal with city planning within the limits of the cities they represent. A list of cities having such commissions and a brief summary of mandatory legislation in Massachusetts and Pennsylvania, and permissive legislation in New York, providing for city-planning commissions, were given in the INTERNATIONAL YEAR BOOK for 1913. State supervision of these local commissions in Massachusetts was under the Homestead Commission. Cleveland, Ohio, which for some years past had been making steady progress with its civic centre, created a City Plan Commission with wide powers, by an ordinance approved May 14, 1914. The Commission consisted of seven members, appointed by the mayor to serve five-year terms without compensation. The members must have "knowledge and large experience" in one or more of the following subjects: architecture, landscape architecture, engineering, building, transportation, painting, sculpture, finance, commerce, industry, law, civic administration, social welfare, and real estate. The mayor at all times, and directors of city departments when matters concerning their departments are under consideration, may sit with the commission but cannot vote. The commission is directed to prepare plans for the physical development and improvement of the city, and all designs for and locations of public works of art, buildings, bridges, and other public structures. All maps and plans of land intended for public use must be approved by the commission as a condition of legality. The ordinance was drawn by a committee of the Cleveland Chapter of Architects in coöperation with Mayo Fesler, secretary of the Cleveland Civic League, and is summarized at greater length in *The American City* for July, 1914.

In New York City the Board of Estimate appointed from among its own members a Committee on City Plan consisting of George McAneny, President of the Board of Aldermen, as chairman and the five borough presidents. The Board of Estimate also appointed an Advisory Commission on City Planning, consisting of 25 members, with Charles D. Norton as chairman. Robert H. Whitten was secretary to both the committee and the commission. Mr. Norton was formerly secretary of the Chicago City Plan Commission.

PROPOSED CANADIAN TOWN PLANNING ACT. Like the United States, Canada has no power over city planning, but unlike the United States it has entered the city-planning field in an advisory capacity. Early in the year the Canadian Commission on Conservation (Ottawa, Ont.) had completed a tentative Town Planning Act for criticism. When perfected the act was to be submitted to the nine provincial legislatures for possible adoption, with variations to meet local conditions. As summarized in *Engineering News* of June 4, 1914, p. 1267: "Briefly, the bill provides for provincial town planning boards, under provincial departments of municipal affairs. These boards would consist of a 'town planning comptroller, who shall be a permanent paid executive officer, skilled in town planning and chairman of the board, and responsible to the minister' of municipal affairs, and of a number of members of the provincial government serving ex-officio. The bill authorizes every municipal authority to create a local housing and town-planning board, consisting of the mayor, town engineer, medical health officer and not less than two ratepayers, preferably an architect and a financier. Municipal authorities adopting the act would also appoint a housing and town-planning commissioner, 'skilled in town planning,' who would be executive officer of the planning board and who would not be removable from office nor subject to reduction of salary without approval of the central planning board. The central authority, on its own motion or on petition of 10 or more municipalities, would have power to appoint a local planning board. Any local planning board would be a corporate body, with power to acquire, lease, or sell property, and to prepare and adopt a town-planning scheme, each of these two steps to be subject to the approval of the central planning board. No funds to carry out a town-planning scheme could be raised without the approval of the local city or town council. The principles of ordinary and of excess condemnation are embodied in the bill."

In the latter part of the year the Canadian Commission on Conservation secured as its Town Planning Adviser Thomas Adams, who has served the Local Government Board of England as Town Planning Inspector since the British Housing and Town Planning Act of 1909 went into effect.

COMPETITIONS. A number of planning competitions, chiefly minor in character but hopeful signs of the times, were held. Among these was a contest with 146 participants for laying out 350 acres of land on a new harbor at Richmond, Cal. A first prize of $5000 and five prizes of $1000 each were offered by the owner, H. C. Cutting, Monadnock Building, San Francisco. The subdivision was chiefly for docks and warehouses, business and industrial purposes, but a residential section was also provided. The first prize was awarded to Arthur C. Comey, Landscape Architect, Cambridge, Mass. Of the five other prizes three were won by engineers and two by landscape architects. The first and one of the other premiated designs and the verdict of the jury were published in *Engineering News* of June 25, 1914. A "four corners" competition was held under the Throop College of Technology, Pasadena, Cal. A "neighborhood centre" competition was begun by the City Club of Chicago, with a preliminary test to close on Nov. 9, 1914, and a final test on Jan. 25, 1915. An architectural competition for the Parliament House for the new Federal capital of Australia was announced, to close March 31, 1915. Prizes totaling £6000 were offered. One of the judges composing an international committee was Louis H. Sullivan, an architect of Chicago.

THE BILLERICA GARDEN SUBURB. This project at Billerica, 21 miles from Boston, Mass., was organized to house employees in the new repair shops of the Boston & Maine Railroad. A 57-acre tract in a rural section was to be laid out by a company and provision was to be made for various plans of ownership and for rented dwellings. Consult *The American City*, July, 1914, for sketch plan and for description of scheme.

CONVENTIONS, SUMMER SCHOOL, AND EXHIBITS. The sixth annual Conference on City Planning was held at Toronto, Ont., May 25 to 27. Much attention was given to waterfront development, the financing of city planning, and city transportation, including the motor bus. Frederick Law Olmsted, Brookline, Mass., was continued as chairman. The programme of the International Garden Cities and Town Planning Association provided for a meeting in London on July 9 and making a tour through England and Scotland. Ewart G. Culpin, 3 Grays Inn Place, London, W.C., was secretary. The second Summer School of Town Planning, held at the University of London School of Architecture, was attended by 45 students, of whom 18 were architects and 9 civil engineers and surveyors. There were 4 students from the United States, 1 from Canada, 1 from Italy, and 1 from Denmark. The opening day coincided with the declaration of the European War, or perhaps the attendance would have been larger. The town planning exhibit, collected with great pains by Prof. Patrick Geddes during a considerable period, was lost in the autumn on its way to India by the sinking of the *Clan Grant* by the German cruiser *Emden*.

Bibliography. *Modern City Planning and Maintenance*, by Frank Koester (New York); *Carrying Out the City Plan; The Practical Application of American Law in the Execution of City Plans*, by Flavel Shurtleff and Frederick Law Olmsted (New York); *An Introduction to Town Planning*, by Julian Julian, borough surveyor of Cambridge, England (London), deals chiefly with British town-planning laws and by-laws; *A List of American City-Planning Reports*, in *The American City* (New York), December, 1914, includes more than a hundred reports made since 1900 on city planning, civic centres, and the like in nearly a hundred cities. Many of these reports were listed in the INTERNATIONAL YEAR BOOK for 1913.

CIVIC ASSOCIATION, AMERICAN. The annual meeting of this association was held in Washington, Dec. 2, 3, and 4, 1914. The president, J. Horace McFarland, presided. Honorable Oliver P. Newman, president of the Board of District Commissioners, greeted the association in behalf of the District of Columbia. The annual address of the president was entitled, "Wanted—American City Planning for American Cities." Other addresses were "The Washington of To-day and a Vision of the Washington of To-morrow," Col. William W. Harts; "The Relation of the Nation to its Capital," Hon. Henry B. F. Macfarland; "Recreation for Congested Population," Mr. George A. Parker; "Consolidation of City and County Parks," Mr. Alfred C. Clas; "Children at Work in Gardens," Mrs. John T. D. Blackburn; "Our Surroundings and Their Influence," Mr. Arnold W. Brunner; "The Economic Basis of City Planning," Mr. Thomas Adams; "What Canada has done for its National Parks," Hon. J. B. Harkin; and "Glacier National Park," by Clarence J. Blanchard. The officers of the association are J. Horace McFarland, president; treasurer, William B. Howland; secretary, Richard B. Watrous.

CIVIC CENTRES. See CITY PLANNING.

CIVIC FEDERATION, NATIONAL. The fifteenth annual meeting of the federation was held in New York City on December 4 and 5. There was a large attendance and many important matters relating to the work of the federation were discussed. President Seth Low stated in his annual address that the most important work completed within the year was the Draft bill prepared by the Executive Council of the Department on the Regulation of Public Utilities, which bill presents the results of a study of the problem carried on for more than two years by competent men. Progress was made in the social service of the Industrial Economics Department, which was begun in 1913. Important work during the year was also done by the Committee on Workmen's Compensation, the Committee on Welfare Work, and by the Committee on the Right of Free Speech, the work of the Woman's Department being especially effective. Among the important addresses delivered at the meeting were the following: "Shall the Government Own and Operate the Railroads, Telegraph and Telephone Systems and Public Utilities?" Jonathon Bourne, Jr.; "The Worker's Fair Share," George W. Perkins; "Municipalization or a Just Regulation," J. W. Sullivan; "The Trend toward Government Management of Business," Jeremiah W. Jenks; "Some Lessons We may Learn from the War," John Hays Hammond.

The meeting of the Woman's Department was held on December 3 at the Colony Club. Reports were made upon the year's work by the officers and the chairman of sections and committees; these included plans for rural improvements by the Country Life Committee; the problem of recreation resources and possibilities for workingwomen by the Vacation Committee; the special work of the Vacation War Relief Committee; and others. The phases of industrial, agricultural, and social problems toward which its activities are directed made the annual meeting of the Woman's Department of exceptional and vital interest. An interesting social feature of the meeting was the performance of the ballet *Pandora's Box* under the auspices of the Vacation Committee. The proceeds were devoted toward the administration expenses of the vacation and war relief funds.

The Employer's Welfare Department gave a reception in connection with the opening of its permanent welfare exhibit on the thirty-fourth floor of the Metropolitan Tower on December 3. There were shown moving picture films of the sociological work of the Ford Motor Company at Detroit, Mich., and the welfare work of the Government Bureau of Engraving and Printing at Washington. The officers of the federation in 1915 are president, Seth Low; vice-presidents, Samuel Gompers and Benjamin I. Wheeler; treasurer, Isaac N. Seligman; chairman of the executive council, Ralph M. Easley.

CIVIL SERVICE. FEDERAL CIVIL SERVICE. There were in the Federal service on June 30, 1913, 282,597 competitive positions, 121,804 excepted and noncompetitive positions, and 26,744 unclassified positions, forming a total of 431,145. Of these, 10,543 were positions calling for presidential appointment. The aggregate total salary paid to persons in these positions is estimated at $400,000,000 a year.

Advocates of a strict civil service have found on a whole the attitude of President Wilson's administration favorable to that cause. Civil service law and rules have been well sustained by the President and the Civil Service Commission, except possibly in the matter of fourth-class postmasters. Executive orders providing for limited competition in the appointment of consuls and diplomatic secretaries were adhered to during the year, with only five special exceptions made by the President, four being in favor of men qualified by experience and training. The annual appropriation bill for the Post Office Department, introduced into Congress in January, called for $305,000,000, the largest sum ever required in one year for this purpose, and carried a rider depriving 2400 assistant postmasters of the safeguards of the merit system. Some of these men had gained and all held their positions under civil service regulations, but the passage of this rider would clear the way for their dismissal and for the appointment of untrained partisans in their places. In a minority report the Republican members of the committee characterized the use of riders on appropriation bills as a vicious policy, which the Democrats, while in the minority, had opposed, and the Civil Service Reform League, of which the President was formerly an officer, addressed to every member of the House a letter setting forth the objections to the proposed legislation.

The rider failed to pass, largely as a result of the attitude toward it adopted by President Wilson, who made known to the chairman of the committee that he was unalterably opposed to it. As this opinion foreshadowed a veto, the committee on rules declined to bring in a special rule by which the rider was to be considered part of the bill, but it cannot be denied that a disposition has been shown by Congress to limit the scope of the civil service law by rider legislation. A rider of this description, directing that the employees of the Federal Reserve Board might be appointed without complying with the requirements of the civil service law, was placed on the Banking and Currency bill and was adopted only by the vote of Vice-President Marshall, which broke a tie. Riders of a similar sort were placed in an Indian appropriation, and several other of the large appropriation bills. In the Trade Commission bill Congress exempted attorneys, special experts, and examiners of the new board from the operation of the law.

STATE AND MUNICIPAL CIVIL SERVICE. Charges made against the Civil Service Commission of New York were dismissed by Governor Glynn on December 29. These charges were filed by the Civil Service Reform Association and criticised in general the administration of the law. The high State Civil Service Commission on December 7 began a thorough investigation of the records of the Toledo Civil Service Commission. This investigation was made following the receipt of a large number of complaints that the city employees had been discharged without regard to the Civil Service law, in order to make room for political followers of the new administration. An effort was made in 1914 to secure the adoption of a State civil service law in Texas. The Cook County Civil Service Commission of Illinois underwent a complete reorganization during the year, three commissioners resigning.

CIVIL SERVICE COMMISSION. See CIVIL SERVICE.

CIVIL SERVICE REFORM LEAGUE, NATIONAL. The annual meeting of the league was held at Chicago, December 3 and 4, the address being delivered by the president, Richard H. Dana, who reviewed the work of the league during the year and gave a resumé of civil service conditions in the National and State governments. The council of the league reported in general the constant growth of popular sentiment in favor of the merit and efficiency system. William B. Hale, vice-president of the Chicago Civil Service Reform Association, delivered an address, entitled "A Constructive Programme for the National Civil Service." George T. Keyes, secretary of the league, spoke on "Some Essential Features of a Model Civil Service Law." Resolutions were adopted calling attention to the efforts made by certain members of Congress to lessen the effect of the Civil Service law urging the classification of the higher administration officers, especially the collectors of customs and internal revenue and news marshals, and postmasters of the first, second, and third class The officers of the league are, president, Richard Henry Dana; chairman of the council, Robert D. Jenks; secretary, George T. Keyes; assistant secretary, Harry W. Marsh; treasurer, A. S. Frissell.

CLARK COLLEGE. An institution for higher education at Worcester, Mass. The college is entirely independent in administration and endowment, although the same buildings are used for both Clark College and Clark University. There were in the several departments of the college in the autumn of 1914, 145 students, and a faculty numbering 24. There were several changes in the faculty during the year. No noteworthy benefactions were received. The productive funds of the college amounted to $1,500,000, and the income to about $70,000. The library contains about 70,000 volumes. The president of the college is Edmund C. Sanford, Ph.D.

CLARK UNIVERSITY. An institution for post-graduate study, founded at Worcester, Mass., in 1889. There were enrolled in the autumn of 1914, 94 students engaged in graduate work, and a faculty numbering 21. The endowment, including university, library, and art department amounted to $2,400,000, and the annual income amounts to about $100,000. The university library contains about 60,000 books and pamphlets. The president is G. Stanley Hall, Ph.D., LL.D. See CLARK COLLEGE.

CLASSICAL LITERATURE AND SCHOLARSHIP. See PHILOLOGY, CLASSICAL.

CLAYTON, POWELL. An American soldier and diplomat, died Aug. 25, 1914. He was born in Bethel, Pa., in 1833, and was educated in the public schools and at Partridge Mill Academy. After studying civil engineering he engaged in the practice of that profession until 1861, when he was appointed captain of the First Kansas Infantry. He served throughout the Civil War, rising to the rank of brigadier-general of volunteers. In 1865 he was honorably discharged from the service. After the war he removed to Arkansas, where in 1882 he built the Eureka Springs Railway. He also built several railway, water, and sewer systems in Arkansas. He was active in politics from the organization of the Republican party and from 1867 to the time of his death was a member of the State Central Committee of Arkansas. He was also a member of the Republican National Committee from 1872 to 1913, with the exception of about three years. From 1868 to 1871 he was Governor of Arkansas and was United States Senator from 1871 to 1877. He attended every Republican National Convention from 1872 to 1912. From 1897 to 1905 he was American Ambassador to Mexico. He retired from active participation in politics in 1905.

CLAYTON ANTI-TRUST BILL. See TRUSTS; UNITED STATES, *Congress*.

CLAY-WORKING INDUSTRIES. The clay-working industries were on the whole prosperous in 1913. The total value of all clay products marketed in that year was $181,289,132, compared with $172,811,275 in 1912. Of the two great divisions of the industry, brick and tile, and pottery, the former showed the larger increase, both actual and proportionate. The increase in the brick and tile industry was $6,989,646, or 5.13 per cent. The increase in the pottery industry was $1,488,211, or 4.08 per cent. The most prominent features in the industries in 1913 were the large decrease in the production and value of common brick in the region supplying the New York market and in the value of vitrified brick, sewer pipe, fireproofing, and fire brick. The growing use of hollow tile not only in fireproof construction in the larger buildings, but also in dwelling houses and other small structures, is shown in the large and continued increase in the value of this material. The vitrified paving brick industry had the most satisfactory year it has yet experienced. The value of brick and tile produced in 1913 by the four States leading this industry was $22,185,383 for Pennsylvania; $21,868,407 for Ohio; $14,280,611 for Illinois; and $10,866,833 for New Jersey. The value of pottery produced in 1913 by the same States, which held supremacy for this as well as for brick and tile, was for Ohio $38,388,296; for Pennsylvania $24,231,482; for New Jersey $19,705,378; and Illinois $15,195,874.

In the brick and tile industry decrease was shown in the quantity and value of common brick and in the value of fancy or ornamental brick and of architectural terra cotta. The decrease in the quantity of common brick was 466,448,000, or 5.45 per cent. In the pottery industry every variety of ware except one showed an increase, and the year was one of notable progress in every way. The new tariff law which will have a much greater influence on the pottery industry than on the brick and tile industry, both in raw material and on the finished product, went into effect so late in the year that it had little or no apparent result.

A notable feature of the clay-working industries was the tendency toward the concentration of the industry into fewer and larger units, chiefly by the elimination of the smaller temporary plants, though considerable consolidation also was going on. In 1914, the curtailment of building operations was reflected in the decreased output of common brick in the eastern part of the United States, particularly at yards along the Hudson and Hackensack rivers, and the same was true to a considerable extent in other localities.

CLEARING HOUSE. See FINANCIAL REVIEW.

CLIMATE. See GEOLOGY, section on *Ancient Climates;* METEOROLOGY.

CLUB BUILDINGS. See ARCHITECTURE.

COAL. The total production of coal in the United States in 1913 was 570,048,125 short tons, valued at $760,488,785. Of the coal produced, 81,718,680 long tons, valued at $195,181,-

127, was Pennsylvania anthracite, and 478,523,203 short tons, valued at $565,307,658, was bituminous and lignite coal. The production in 1913 was an increase of 6.7 per cent over that of 1912. The higher values in 1912 were not only maintained but generally improved upon in 1913. The general average value per ton showed an advance of 3 cents over 1912, and reaching within 8 cents of the record high average of 1903. A notable exception to the higher prices obtained in 1913 among the more important producing States was in Illinois, where, because of peculiar local conditions, the average value showed a decline. The total value of the combined production of anthracite and bituminous coal in 1913 was $760,488,785, compared with $695,606,071 in 1912. The production of anthracite in Pennsylvania increased from 75,322,855 long tons, valued at $177,622,626 in 1912, to 81,718,680 long tons, valued at $195,181,137 in 1913. (For a discussion of the production of coal in Pennsylvania, see PENNSYLVANIA.)

Increases in bituminous production were generally distributed over the country, there being only six States where the production in 1913 was less than in 1912, and in one of these States, Colorado, the decrease was due entirely to labor troubles. During the first nine months of the year the activity in the iron and steel trades which had developed in 1912 was well maintained and created activity in the coking-coal districts. This fell off somewhat sharply during the last quarter of the year, but the demands from other lines of manufacture and from the railroads was well sustained. In the Central and Southwestern States the production of coal was stimulated through the continued decrease in the production of natural gas in the northern part of the mid-continent field and the withdrawal of large quantities of fuel oil from the markets. There was some complaint of labor shortage, but in that respect also there was an improvement compared with 1912, as many of the mine workers who had returned to Europe to enlist in the Balkan War resumed their places in the coal mines throughout the country and especially in the Western States.

The largest increase in the production of bituminous coal was in Pennsylvania. West Virginia showed the second largest gain. The significant increase of the year, however, was in Kentucky, which showed the third largest gain and the largest percentage of increase among the important coal-producing States. Indiana came fourth, Illinois fifth, Ohio sixth, and Alabama seventh in the increase in production. As just noted the only important State to show a decrease was Colorado, whose production fell off nearly 1,750,000 tons on account of labor troubles. One State, Wyoming, showed an increase in production and a decrease in value, and one State, Maryland, had a decrease in quantity of output and an increase in value.

The coal mines of the United States in 1913 gave employment to an average of nearly three-quarters of a million men. As none of the wage agreements between employers and miners terminated in that year there was no general suspension among the organized miners, although two desperate struggles to force the recognition of union men were carried on, one in Kanawha field in West Virginia and the other in Colorado. (For a discussion of these troubles, see STRIKES.)

COAL-MINE ACCIDENTS. The fatalities in the coal mines in the United States in 1913 showed an increase over the preceding year. In 1913 2785 men were killed, compared with 2360 in 1912. Of the total number of fatalities in 1913, 618 were in the anthracite mines of Pennsylvania and 2167 in the bituminous and lignite mines. As is usually the case the most prolific cause of death was falling roofs and coal which claimed 1264 victims, or 45.4 per cent of the

QUANTITY AND VALUE OF COAL PRODUCED IN THE UNITED STATES, 1912-1913. IN SHORT TONS.

	1912		*1913*	
State	*Quantity*	*Value*	*Quantity*	*Value*
Alabama	16,100,600	$20,829,252	17,678,522	$23,083,724
Arkansas	2,100,819	3,582,789	2,234,107	3,923,701
California and Alaska	11,333	26,441	26,911	95,173
Colorado	10,977,824	16,345,336	9,232,510	14,035,090
Georgia and North Carolina	227,703	338,926	255,626	361,319
Idaho	2,964	9,313	2,177	5,285
Illinois	59,885,226	70,294,838	61,618,744	70,313,605
Indiana	15,285,718	17,480,546	17,165,671	19,001,881
Iowa	7,289,529	13,152,088	7,525,936	13,496,710
Kansas	6,986,182	11,324,130	7,202,210	12,036,292
Kentucky	16,490,521	16,854,207	19,616,600	20,516,749
Maryland	4,964,038	5,839,079	4,779,839	5,927,046
Michigan	1,206,230	2,399,451	1,231,786	2,455,227
Missouri	4,339,856	7,633,864	4,318,125	7,468,308
Montana	3,048,495	5,558,195	2,240,973	5,653,539
New Mexico	3,536,824	5,037,051	3,708,806	5,401,260
North Dakota	499,480	765,105	495,320	750,652
Ohio	34,528,727	37,083,363	36,200,527	39,948,058
Oklahoma	3,675,418	7,867,331	4,165,770	8,542,748
Oregon	41,637	108,276	46,068	116,724
Pennsylvania, bituminous	161,865,488	169,370,497	173,781,217	193,039,806
Tennessee	6,473,228	7,379,903	6,903,784	7,883,714
Texas	2,188,612	3,655,744	2,429,144	4,288,920
Utah	3,016,149	5,046,451	3,254,828	5,384,127
Virginia	7,846,638	7,518,576	8,828,068	8,952,653
Washington	3,360,932	8,042,871	3,877,891	9,248,137
West Virginia	66,786,687	62,792,234	71,308,982	71,872,165
Wyoming	7,368,124	11,648,088	7,393,066	11,510,045
Total bituminous	450,104,982	517,983,445	478,528,208	565,307,658
Pennsylvania anthracite	84,361,598	177,622,626	91,524,922	195,181,127
Grand total	534,466,580	695,606,071	570,048,125	760,488,785

total number of deaths. In 1912 the deaths due to falling roofs and coal were 1151, or 48.8 per cent of the total. The increase in the number of fatalities in 1913 over the preceding year was due chiefly to three explosions of dust in the bituminous mines, the worst of which was a disastrous explosion at Dawson, N. Mex., in October, the immediate result being the death of 261 mine employees. Next to this in the number of men killed was the explosion of the Cincinnati mine in Washington Co., Pa., which occurred in April and resulted in the death of 96 men. Mine cars and locomotives underground killed 424 men in 1913, against 362 in 1912. Premature blasts and other accidents incident to the use of explosives killed 138 men in 1913 and 133 in 1912. The total number of fatal accidents underground increased from 2119 in 1912 to 2562 in 1913.

Coal Consumption. More than 95 per cent of the total production of anthracite and bituminous coal in the United States is consumed within the country, although the efforts to build up an export trade, particularly for the high-grade bituminous coals, has resulted in a considerable expansion of business done with foreign countries. The total quantity of coal exported in 1913 was 24,798,080 short tons, compared with 20,326,619 in 1912. The imports in 1913 amounted to 1,583,560 short tons. The accompanying table shows the quantity and value by States of the coal produced in 1912 and 1913.

World's Production. The accompanying table shows the world's production of coal for the latest year available. The figures for foreign countries were compiled by Mr. William G. Gray, statistician of the American Iron and Steel Institute. For the sake of convenience the quantities are expressed in the measurement customary in each country and reduced for purposes of comparison to the short ton of 2000 pounds.

THE WORLD'S PRODUCTION OF COAL

Countries	*Usual unit in producing country*	*Equivalent in short tons*
United States (1913) long tons	508,971,540	570,048,125
Great Britain (1913) . . do . .	287,430,473	321,922,130
Germany (1912), metric tons	255,810,094	281,979,467
Austria-Hungary (1912), ... do . . .	51,668,855	56,954,579
France (1913), ... do . . .	40,922,203	45,108,544
Russia (1912) . . . . . . do . . .	28,805,900	31,752,744
Belgium (1912) . . . . . do . . .	22,972,740	25,322,851
Japan (1912) . . . . do . . .	19,639,755	21,648,902
China (1912) . . . . do . . .	15,000,000	16,534,500
India (1912) . . . . . long tons	14,706,339	16,471,100
Canada (1913) . . . short tons	15,115,089	15,115,089
New South Wales (1913) . . . . long tons	10,414,165	11,663,865
Spain (1912) . . . metric tons	4,136,809	4,559,453
Transvaal (1911) . . long tons	3,878,286	4,343,680
Natal (1911) . . . . do . . .	2,392,456	2,679,551
New Zealand (1912) . . do . . .	2,177,615	2,438,929
Holland (1912) . metric tons	1,725,394	1,901,902
Asiatic Russia (1910) do . . .	1,244,000	1,371,261
Chile (1912) . . . . do . . .	1,334,407	1,470,917
Queensland (1912) long tons	902,166	1,010,426
Mexico (1912) . . metric tons	891,224	982,396
Bosnia and Herzegovina (1912) . . . . do . . .	852,920	940,174
Turkey (1912) . . . . . . do . . .	824,905	909,293
Italy (1912) . . . . do . . .	663,812	731,720
Victoria (1912) . . . long tons	593,155	664,334
Dutch East Indies (1912) . . . . metric tons	564,882	622,669
Orange Free State (Orange River Colony) (1911) . . . . long tons	430,978	482,690
Indo-China (1912) metric tons	427,523	471,259
Peru (1912) . . . . do . . .	278,927	307,461
Servia (1911) . . . . do . . .	304,359	335,495
Sweden (1912) . . . . . . do . . .	360,291	397,149
Western Australia (1912) . . . . long tons	295,079	330,488
Formosa (1912) . . metric tons	278,455	306,941
Bulgaria (1911) . . . . . do . . .	245,314	270,410
Rhodesia (1911) . . . long tons	189,758	212,529
Rumania (1911) metric tons	242,025	266,784
British Borneo (1910) . . . . long tons	171,366	191,930
Korea (1911) . . . metric tons	123,668	136,319
Cape Colony (Cape of Good Hope) (1911) . . . . long tons	79,485	89,023
Tasmania (1912) . . . . do . . .	53,560	59,987
Spitzbergen (1911) . . . . metric tons	40,000	44,092
Brazil (1911) . . . . do . . .	15,000	16,535
Portugal (1912) . . . . . do . . .	15,366	16,938
Venezuela (1908) . . . . do . . .	14,064	15,503
Switzerland (1911) . . . do . . .	7,500	8,267
Philippine Islands (1912) . . . . do . . .	2,720	2,998
Greece (1910) . . . . do . . .	1,500	1,653
Unspecified . . . . long tons	250,000	280,000
Total		1,448,393,052
Percentage of the United States		39.5

Production in 1914. According to estimates made by the United States Geological Survey, the production of coal in the United States in 1914 was about 510,000,000 short tons, a decrease of about 60,000,000 tons compared with the record output of 1913. Practically all of this decrease was in the output of bituminous mines. The production of Pennsylvania anthracite was not materially different from that of the preceding year. The principal decreases in the production of bituminous coal were in the coking districts. It is estimated that in Pennsylvania alone the bituminous coal output decreased between 20,000,000 and 25,000,000 tons. West Virginia, on the contrary, on account of different conditions, showed an increase in production over 1913. Among the Eastern States Ohio showed the largest proportion of decrease, for in addition to the depressed condition of business the labor controversies in the eastern part of the State kept a number of mines idle for practically the entire year. The effect of the war upon the coal trade in the opinion of the authorities was to retard or to prevent the return to more normal conditions which was about to be accomplished when the war broke out. As usual in times of depression and of decreased production, there was a plentiful supply of labor throughout the bituminous coal-mining region during the entire year, and for the same reasons there was no complaint of inadequate transportation facilities.

COAL MINERS. See the article Arbitration and Conciliation, Industrial; also Strikes.

COAST FORTIFICATIONS. See United States, *Army*.

COBALT-NICKEL PYRITE. See Mineralogy.

COBWELL METHOD OF GARBAGE REDUCTION. See Garbage and Refuse Disposal.

COCAINE AND OPIUM HABIT. The crusade against cocaine and other habit-forming drugs was very active in New York City. Professional peddlers of the drug were found to be numerous and some of them were accused of selling cocaine, heroin, and opium to school children in Brooklyn. More than 500 packages of the drugs were seized, and it was alleged that they were sold on the street corners for as little as five cents. The Boylan law, designed to establish stricter control of the sale and use of habit-forming drugs in New York State, was a Chapter of the Public Health Law, becoming effective on July 1, 1914. The law provided that no person shall sell at retail or give away any chloral or opium, or any preparation containing these drugs or their derivatives, except upon the written prescription of a physician, veterinarian, or dentist. By Section 245 of the law, domestic and proprietary remedies, however, are exempted from these provisions, unless they contain more than a given amount of the prohibited drug. The law does not apply to plasters, liniments, and ointments for external use. Where prescriptions call for more than 4 grains of morphine, 30 grains of opium, 2 grains of heroin, 6 grains of codeine, or 4 grains of chloral, they may not be filled until the correctness of the prescription has been verified by telephone or otherwise. Possession of any of the designated drugs by other than a duly authorized person is a misdemeanor. A section (249) regulates the sale of hypodermic needles and syringes, while another provides for the commitment of habitual users of the prohibited drugs to State, county, or city institutions licensed by the State Hospital Commission.

COCHIN-CHINA. A French colony and the southernmost of the States of French Indo-China (q.v.).

COCKROACHES. See INSECTS AND PROPAGATION OF DISEASE.

COE, EDWARD BENTON. An American clergyman of the Dutch Reformed Church, died March 19, 1914. He was born in Milford, Conn., in 1842, and graduated from Yale College in 1862. He studied theology at the Union Theological Seminary, and in France and Germany. From 1864 to 1879 he was Street professor of modern languages at Yale. He was ordained to the ministry of the Reformed Church in America in 1879. From that year until his death he was minister of the Collegiate Church of New York. In 1898 he was president of the General Synod of the Reformed Church in America. He was the author of *Life Indeed* (1899), and numerous sermons and addresses. He received the degrees of D.D. and LL.D. from Rutgers College, and the degree of S.T.D. from Yale.

COINAGE. See UNITED STATES.

COINS, VALUE OF. The following table gives the value of foreign coins in the currency of the United States, on Dec. 31, 1914.

Country	*Standard*	*Monetary Unit*	*Value in U. S. Gold Dollar*	*Remarks*
Argentina	Gold	Peso	$0.96,5	Currency: depreciated paper, convertible at 44 per cent of face value.
Austria-H.	Gold	Crown	.20,3	
Belgium	Gold	Franc	.19.3	Member of Latin Union; gold is the actual standard.
Bolivia	Gold	Boliviano	.38.9	12½ bolivianos equal 1 pound sterling.
Brazil	Gold	Milreis	.54,6	Currency: Government paper. Exchange rate about $0.25 to the milreis.
British Colonies in Australia and Africa	Gold	Pound sterling	4.86,65	
Canada	Gold	Dollar	1.00,0	
Cent. American States:				
B. H'nd's	Gold	Dollar	1.00,0	
Cos. Rica	Gold	Colon	.46,5	
Gua'mala	Silver	Peso	.39,8	Currency: inconvertible paper, exchange rate 16 to 18 pesos—$1.00.
Hond'ras	Silver	Peso	.39,8	Currency: bank notes.
Nica'gua	Gold	Cordova	1.00,0	
Salvador	Silver	Peso	.39,8	Currency: convertible into silver on demand.
Chile	Gold	Peso	.36,5	Currency: inconvertible paper; exchange rate, approximately, $0.14.
China	Silver	Tael Shanghai	.59,6	
		Haikwan	.66,4	
		Canton	.65,0	
Colombia	Gold	Dollar	1.00,0	Currency: inconvertible paper; exchange rate, approximately, $102 paper to $1 gold.
Denmark	Gold	Crown	.26,8	
Ecuador	Gold	Sucre	.48,7	
Egypt	Gold	Pound (100 piasters)	4.94,3	The actual standard is the British pound sterling, which is legal tender for 97½ piasters.
Finland	Gold	Mark	.19,3	
France	Gold	Franc	.19,3	Member of Latin Union; gold is the actual standard.
Germany	Gold	Mark	.23,8	
Gt. Britain	Gold	Pound sterling	4.86,65	
Greece	Gold	Drachma	.19,3	Member of Latin Union; gold is the actual standard.
Hayti	Gold	Gourde	.96,5	Currency: inconvertible paper; exchange rate, approximately, $0.29,41.
India	Gold	Rupee	.32,4	(15 rupees equal 1 pound sterling.)
Italy	Gold	Lira	.19,3	Member of Latin Union; gold is the actual standard.
Japan	Gold	Yen	.49,8	
Liberia	Gold	Dollar	1.00,0	Currency: depreciated silver token coins; customs duties are collected in gold.
Mexico	Gold	Peso	.49,8	Mexican exchange rate fluctuating and uncertain.
Netherlands	Gold	Florin	.40,2	
Newfoundland	Gold	Dollar	1.01,4	
Norway	Gold	Crown	.26,8	
Panama	Gold	Balboa	1.00,0	

Country	*Standard*	*Montesry Unit*	*Value in U. S. Gold Dollar*	*Remarks*
Paraguay	Silver	Peso	.39,8	Currency: depreciated paper, exchange rate, 1,550 per cent.
Persia	Gold	Kran	.17,0	This is the value of the gold kran. Currency is silver circulating above its metallic value; exchange value of silver kran, approximately, $0.08,75.
Peru	Gold	Libra	4.86,65	
Philip. Islands	Gold	Peso	.50,0	
Portugal	Gold	Escudo	1.08,0	Currency: inconvertible paper; exchange rate, approximately, $0.93,94.
Rumania	Gold	Leu	.19,3	
Russia	Gold	Ruble	.51,5	
S. Domingo	Gold	Dollar	1.00,0	
Servia	Gold	Dinar	.19,3	
Siam	Gold	Tical	3.71,0	
Spain	Gold	Peseta	.19,3	Valuation is for the gold peseta; currency is silver circulating above its metallic value; exchange value, approximately, $0.17,94.
Straits Set.	Gold	Dollar	.56,7	
Sweden	Gold	Crown	.26,8	
Switzerland	Gold	Franc	.19,3	Member Latin Union; gold is actual standard.
Turkey	Gold	Piaster	.04,4	100 piasters equal to the Turkish £.
Uruguay	Gold	Peso	1.03,4	
Venezuela	Gold	Bolivar	.19,3	

COKE. The production of coke in the United States in 1913 exceeded all previous records both in quantity and value, and amounted to 46,299,530 short tons, valued at $128,922,273, compared with 43,983,599 short tons, valued at $111,805,113 in 1912. The statistics for 1913 established a new record not only in quantity and value of output but in the average value per ton for the product. Of the total quantity made in 1913, 33,584,830 tons were beehive or "oven" coke, valued at $80,284,421, and 12,714,700 tons, valued at $48,637,852 were by-product or "retort" coke. The coal consumed in the manufacture of coke in 1913 was 69,239,190 short tons, valued at $100,561,439. Of the 15 coke-producing States for which statistics may be separately published, there were nine in which the production increased in 1913 and six in which the output decreased. Somewhat more than half the total increase was in Pennsylvania. The largest percentage of increase was in Kentucky, whose output showed a gain of 125,529 short tons, or 65.5 per cent, largely due to the operations of the new plant of Semet-Solvay ovens at Ashland. The second State in quantity of increase was Alabama, which gained 348,175 short tons, and in this State also the gain was altogether in the output of by-product coke. Virginia, whose production was entirely from beehive ovens, showed a gain of 335,656 short tons. The principal decreases in the production of coke in 1913 were shown by Colorado and Ohio, the former being due to labor disturbances, and the second to floods in the spring and droughts in the summer and early fall. The accompanying table shows the production of coke by States in 1912 and 1913.

QUANTITY OF COKE PRODUCED IN THE UNITED STATES, 1912-1913, BY STATES, IN SHORT TONS.

State	*1912*	*1913*
Alabama	2,975,489	3,323,664
Colorado	972,941	879,461
Georgia	43,158	42,747
Illinois	1,764,944	1,859,553
Indiana	2,616,339	2,727,025
Kansas	(*a*)	(*a*)
Kentucky	191,555	317,084
New Jersey	270,429	255,792
New Mexico	413,906	467,945
New York	794,618	758,486
Ohio	388,669	351,846
Pennsylvania	27,438,693	28,753,444
Tennessee	370,076	364,578
Utah	(*a*)	(*a*)
Virginia	967,947	1,303,603
Washington	49,260	76,221
West Virginia	2,465,986	2,472,752
Other States	2,259,589	2,345,329
Total	43,983,599	46,299,530

a Included with other States having less than three producers.

The total number of coke ovens in existence on Dec. 31, 1913, was 102,650. Of this number 55,058 were in Pennsylvania. Pennsylvania ranks first in the production of coke, with Alabama second, Indiana third, West Virginia fourth, and Illinois fifth. If all the coke made from West Virginia coal were produced in that State it would occupy second place, as by far the larger part of the coke manufactured in Ohio, Indiana, and Illinois is from West Virginia coal. The total quantity of coke imported and entered for consumption in the United States in 1913 was 101,212 short tons, valued at $435,157, and the quantity exported was 987,395 short tons, valued at $3,309,930.

COLD STORAGE. See FOOD AND NUTRITION; and STOCK RAISING.

COLGATE UNIVERSITY. An institution for higher education, founded at Hamilton, N. Y., in 1819. The students enrolled in the several departments in the autumn of 1914 numbered 518, and the faculty numbered 47. There were no notable changes during the year. The only noteworthy benefaction was one of $5000 for the foundation of scholarships. The productive funds amount to about $2,000,000 and the annual income to about $90,000. The library contains 80,000 volumes. The president is Elmer Burritt Bryan.

COLLEGES. See UNIVERSITIES AND COLLEGES.

COLLEGES, AGRICULTURAL. See AGRICULTURAL EDUCATION.

COLLISIONS. See RAILWAY ACCIDENTS.

COLOMBIA. A republic of northwestern South America. The capital is Bogotá.

AREA AND POPULATION. The area of the republic cannot be stated with any degree of accuracy on account of unfixed boundaries. The boundary with Brazil is undefined, and a large extent of territory claimed by Colombia is also claimed by both Ecuador and Peru. Naturally the estimates of area differ widely; one is 465,700 square miles (equivalent to 1,206,200 square kilometers given in the table below); another, which probably more nearly approximates the eventual area of the country, is 435,100 square miles. The division of the republic into departments has been repeatedly altered in recent years, and the figures for departmental areas given in the table must not be regarded as definitive; no attempt is made to state the areas of the several intendencies and commissaries. The census of March 5, 1912, showed a total population of 5,472,604, but this figure includes an estimated 400,000 for Panama, whose independence Colombia had not recognized. For the intendencies and commissaries, the census showed a total population of 231,522; but this figure included estimates aggregating 94,000 mostly uncivilized Indians. As compared with the total of 5,472,604 in 1912, the reported population in 1905 was 4,533,777; in 1871, about 2,951,000; in 1851, about 2,243,000; in 1835, about 1,686,000. The following table shows population, according to the 1912 census, and, in square kilometers, the estimated departmental areas:

Departments	*Sq. Km.*	*Pop.*	*Capitals*
Antioquia ...	63,200	740,937	Medellín.
Atlántico	2,800	114,887	Barranquilla.
Bolívar	62,000	420,730	Cartagena.
Boyacá	45,723	586,499	Tunja.
Caldas	20,500	341,198	Manizales.
Cauca	56,675	211,756	Popayán.
Cundinamarca	22,350	713,968	Bogotá.
Huila	22,500	158,191	Neiva.
Magdalena ..	53,000	149,547	Santa Marta.
Nariño	26,000	292,535	Pasto.
Norte de Santander	17,374	204,381	Cúcuta.
Santander ...	49,626	400,084	Bucaramanga.
Tolima	22,000	282,426	Ibagué.
Valle del Cauca	10,825	217,159	Cali.
Intendencies:			
Meta	......	29,309	Villavicencio.
Chocó	......	68,127	Quibdó.
Commissaries:			
La Goajira ..	......	53,013	Puerto Estrella.
Arauca	......	4,922	Arauca.
Caquetá	......	24,543	Florencia.
Putumayo ...	......	31,380	Mocoa.
Vaupes	......	5,545	Calamar.
Urabá	......	6,476	Acandí.
Juradó	......	8,207	Pizarro.
Lazarettos ..	......	6,793	
Colombia ..	1,206,200	5,072,604	Bogotá.

The larger towns, according to the 1912 census, include the following (the figures relate to *municipios*, that is, districts which are organized for municipal purposes and which usually include a rather extended rural area): Bogotá, 121,257; Medellin, 71,004; Barranquilla, 48,907; Cartagena, 36,632; Manizales, 34,720; Sonrón, 29,346; Pasto, 27,760; Cali, 27,747; Aguadas, 26,423; Ibagué, 24,693; Palmira, 24,312; Neiva, 21,852; Montería, 21,521; Yarumal, 21,250; Cúcuta, 20,364; Bucaramanga, 19,735; Miraflores (Boyacá), 19,150; Lorica, 19,005; Popayán, 18,724; Cartago, 18,618; Pereira, 18,428; Andes, 18,391; Salamina, 18,195; Fredonia, 18,176; Bolívar (Cauca), 17,1738; Abejorral, 17,508; Santa Rosa de Cabal, 17,009; Ocaña, 16,814; Ríosucio, 16,506; Carmen (Bolívar), 16,332; Espinal, 16,274; Libano, 16,186; Sabanalarga (Atlántico), 16,042; Quibdó, 15,756; Santa Rosa (Antioquia), 15,754; Ituango, 15,246; Jericó (Antioquia), 15,191; Mompós, 14,703; Sogamoso, 14,647; Sincelejo, 14,021; Titiribí, 13,724.

The following table shows by departments the number of males and females and of males able to read (Lit. males):

	Males	*Females*	*Lit. males*
Antioquia	357,302	383,635	122,500
Atlántico	54,939	59,948	19,423
Boyacá	276,551	309,948	46,486
Bolívar	205,080	309,948	46,486
Caldas	170,495	170,703	59,275
Cauca	103,468	108,288	21,344
Cundinamarca	338,472	375,496	89,692
Huila	73,689	84,502	15,481
Magdalena	70,608	78,939	......
Nariño	142,099	150,436	40,415
Norte de Santander .	99,482	104,899	25,351
Santander	191,398	208,686	67,958
Tolima	136,191	146,235	26,175
Valle del Cauca	104,705	112,454	28,181
	2,324,489	2,509,819	......

Education. Primary instruction is free, but not compulsory. According to the most recent report available, primary schools number 4075, with 292,058 pupils. Secondary education is directed largely by the religious orders. There are over 20 normal schools and a few institutions for special or professional education. Bogotá has long been a conspicuous seat of Roman Catholic scholasticism. Its university, founded in 1572, has faculties of letters and philosophy, jurisprudence and political science, medicine and natural science, and mathematics and engineering. Besides the University of Bogotá, there are several so-called universities, as the University of Medellín, the University of Cauca, at Popayán, founded 1910, and the University of Magdalena, at Santa Marta, founded 1913. The State religion is Roman Catholicism.

Production. Colombia has a vast amount of fertile soil, but only a small proportion is under cultivation. Progress in agriculture, mining, and other industries is handicapped by inadequate means of transportation. The leading crop commercially is coffee. Other important products of the soil are bananas, rubber, ivory, nuts, cacao, sugar-cane, cotton, tobacco, and cereals. In some parts of the country, cattle raising is a large and profitable industry. There are large mineral resources, especially in the department of Antioquia, including gold, copper, lead, zinc, mercury, iron, platinum, salt, and emeralds. There are few manufactures, but the Panama hat industry is developing rapidly.

Imports and exports have been valued as follows:

	1910	*1911*	*1912*	*1913*
Imps.	$17,025,637	$18,108,868	$23,964,623	$28,535,800
Exps.	17,625,153	22,375,899	32,221,746	34,315,800

Leading imports in 1912 and 1913 respectively, in thousands of dollars: textiles 10,547 and 11,455; metals, 2917 and 3164; foodstuffs and condiments, 3055 and 2817; railway cars, carriages, wagons, etc., 1032 and 1164; liquors and other beverages, 836 and 1051; drugs and medicines, 838 and 947. The principal exports are shown in the following table:

	1911	*1912*	*1913*
Coffee	$9,475,449	$16,777,908	$18,269,768
Gold	3,751,632	4,610,073	4,100,115
Cattle hides	1,779,790	2,261,722	3,180,782
Bananas	2,172,000	1,996,999	3,059,867
Panama hats	1,088,821	1,174,641	960,362
Tobacco	332,935	442,461	921,100
Ivory nuts	739,419	754,708	819,422
Platinum	345,896	594,188	583,995
Rubber	900,886	786,427	878,210

The value of the trade by countries is shown below, in thousands of dollars:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United States	7,612	7,680	15,838	13,862
United Kingdom	7,839	5,887	4,876	5,566
Germany	4,201	4,012	1,854	3,216
France	2,012	4,409	625	798
Belgium	571	499	...	594
Italy	597	726	...	...
Spain	477	...	308	...
Total, includ. other	23,965	23,536	32,222	34,316

In 1913, the total exports classified as vegetable products were valued at $23,975,300 (of which $12,903,500 to the United States); mineral products, $5,514,600 ($3,442,800); animal products, $3,362,700 ($1,543,500); manufactured products, $1,017,100 ($800,600); live animals, $85,800 ($2100); miscellaneous, $48,700 ($9000).

Communications. Inland traffic is carried on to a considerable degree by means of the Magdalena River and its tributaries. Railway facilities are most inadequate. The railways form no continuous system, but consist of various short lines engaged in local traffic. Recent statistics are not available; the total length in operation at the end of 1911 was reported at 1000 kilometers. There was some railway construction during the following three years. Two lines were under construction in 1914 in the southwest part of the country, one from the port of Buenaventura to Cali and one from Cali to Popayán. The latter line (about 150 kilometers) was not expected to be open to traffic before the autumn of 1916. Reported length of telegraph lines, over 19,000 kilometers; post offices, over 600.

Finance. The gold dollar, or peso, is equivalent to the American dollar; the silver peso fluctuates with the price of silver; the legal value of the paper peso is one cent, but the actual value fluctuates somewhat. Reported budgets have been as follows: 1911, revenue $12,685,119 and expenditure $12,685,119; 1912, $12,043,145 and $12,500,000; 1913, $14,070,652 and $14,060,294; 1914, $16,500,000 and $16,115,000. Of the estimated receipts for 1913, customs were credited with $10,050,370. The largest estimated disbursements were for war, $3,285,032, and public debt, $3,015,986. Public debt: Foreign consolidated (Jan. 1, 1912), £2,486,000 (in addition, guarantee railway debts amounting to £1,469,400); internal (July 1, 1912), 5,476,888 pesos silver; floating, $2,756,545. In addition, there is an enormous outstanding paper currency.

Government. The executive authority is vested in a President, who is elected by direct vote for a term of four years and is assisted by a cabinet of eight members. The legislative power rests with a Congress of two houses, the Senate (35 members, elected indirectly for four years) and the House of Representatives (92 members, elected for four years by direct vote). For the term ending Aug. 7, 1914, the President was Carlos E. Restrepo. For the following term, José Vicente Concha was elected on Feb. 9, 1914, receiving nearly 301,000 votes, or about 90 per cent of the votes cast. The Congress elects for one year a first and a second *designado*, one of whom succeeds to the presidency in case of the President's death or incapacity.

Army. Colombia has a national army whose strength is determined by Act of Congress and every citizen is liable for military service, but beyond supplying a force of about 6000 or 7000 few recruits are required, though on a war basis the forces could be raised to some 50,000.

History. At the beginning of the year, Dr. José Llorente was appointed Secretary of the Treasury to succeed Francisco Restrepo Plata, who went to London as the financial agent of the Colombian government. The presidential elections on February 9 resulted in the election of Don José Vicente Concha (Clerical-Conservative). The President-elect was inaugurated August 15. He appointed the following cabinet: interior, Sr. Miguel Abadia Mendez; war, Isaias Lujan; finance, Bernardo Escobar; treasury, Daniel J. Reyes; education, Emilio Ferrero; public works, Aurelio R. Acosta; commerce and agriculture, Jorge E. Delgado; foreign affairs, Marcos F. Suarez. In March the Minister of Foreign Affairs issued a *communiqué* denying that the United States had exercised pressure to force the withdrawal of the Pearson concession project in 1913 (see the NEW INTERNATIONAL YEAR BOOK for 1913). A discussion of the treaty negotiated between the United States and Colombia will be found in the article on the UNITED STATES. Although there continued to be expressed a bitter resentment against the United States for having robbed Colombia of Panama, there was no little satisfaction at the prospect of receiving $25,000,000 and of acquiring special privileges in respect of the Panama canal. Taking advantage of the presumably more favorable spirit which the treaty had created in Colombia, an American "scientific mission" was sent to spend eight years and $400,000 exploring the country, probably with a view to the discovery of business opportunities for American capital. The contract to deepen and widen the Bocachica entrance to the bay of Cartagena was awarded to the English firm of Pearson & Son. In regard to the enforcement of Colombia's neutrality in the war, see the article on the WAR OF THE NATIONS, section *Neutral Nations*.

COLON. See PANAMA CANAL.

COLORADO. **Population.** The estimated population of the State on July 1, 1914, was 909,537. The population in 1910 was 799,024.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. Bu.*	*Value*
Corn	1914	462,000	10,626,000	$6,376,000
	1913	420,000	6,300,000	4,599,000
Wheat	1914	475,000	11,312,000	9,842,000
	1913	460,000	9,680,000	7,551,000
Oats	1914	325,000	13,000,000	5,850,000
	1913	305,000	10,675,000	4,697,000
Rye	1914	21,000	368,000	289,000
	1913	20,000	340,000	204,000

		Acreage	*Prod. Bu.*	*Value*
Barley	1914	103,000	3,966,000	2,181,000
	1913	100,000	3,250,000	1,820,000
Potatoes	1914	73,000	8,760,000	4,380,000
	1913	80,000	9,200,000	5,980,000
Hay	1914	970,000	*a* 2,328,000	17,227,000
	1913	890,000	1,824,000	18,240,000

a Tons.

MINERAL PRODUCTION. Colorado ranks eleventh among the mineral-producing States and fifth among the States west of the Mississippi River. It is the leading producer of tüngsten ores and vanadium minerals, and in the production of gold is surpassed only by California. It is third in the production of zinc, and fourth in lead and fluorspar. The product of chief value is gold, the production of which in 1913 was almost exactly one-third the total value of the mineral products of the State. Of the total gold output, more than one-half is mined in Teller County, all from deep mines and all from siliceous ores unmixed with other metals. The other important producing counties are San Miguel, Ouray, Lake, San Juan, Gilpin, and Clear Creek. The production of gold decreased from 899,222 fine ounces, valued at $18,588,562, in 1912, to 877,857 fine ounces, valued at $18,146,916 in 1913. Coal is second in importance among the State's mineral products. On account of labor troubles in the last quarter of the year, the production of the State decreased from 10,977,824 short tons, valued at $16,345,336 in 1912, to 9,232,510 tons, valued at $14,035,090 in 1913. The coal production of the State in 1914 is estimated to be about 1,000,000 tons less than in 1913. The production of zinc, which showed a marked increase in 1912 over 1911, suffered a decrease in 1913, which was particularly emphasized in the value of the output. The recoverable zinc content of the ores mined in 1913 was 59,673 short tons, valued at $6,683,400, compared with 66,111 tons, valued at $9,123,374 in 1912. According to the estimates of the United States Geological Survey, the mines of Colorado yielded in 1914, $19,860,000 in gold, 8,742,000 ounces of silver, 75,550,000 pounds of lead, 6,677,000 pounds of copper, and 96,000,000 pounds of zinc, with a total value of $33,300,000 compared with a total of $35,450,585 in 1913. The estimates show an increase of $1,713,000 in gold and decreases of 583,000 ounces in silver, 12,348,000 pounds in lead, 551,000 pounds in copper, and 23,350,000 pounds in zinc. In addition to the decrease in quantities of silver and the base metals, the falling off in average value for these metals caused a decrease in value of $833,000 for silver, $921,000 for lead, and $1,890,000 for zinc. Colorado leads all the Western States in the manufacture of pig iron, but produces only a small quantity of iron ore. The ore from which the iron is made in Colorado is mined chiefly in New Mexico and Wyoming, and the value of the pig iron in the State is not included in the total mineral production. Silver ranks fourth in the value of mineral products, and, unlike gold, showed an increase in output in 1913. The silver production is chiefly from dry and siliceous gold and silver ores and from silver-lead ores. The production of silver increased from 8,212,070 fine ounces, valued at $5,050,423, in 1912, to 9,325,255 fine ounces, valued at $5,632,454 in 1913. The recoverable lead content of the ores mined increased from 37,621 short tons, valued at $3,385,902, to 43,949 short tons, valued at $3,867,502. The other mineral products which had a total value in excess of $1,000,000 were clay products and copper. The output of the stone quarries exceeded that amount in 1912, but fell slightly below it in 1913. Other mineral products of commercial value are cement, fuller's earth, gems, graphite, gypsum, lime, manganiferous ore, mica, mineral waters, natural gas, petroleum, sand and gravel, and sand-lime brick. On account chiefly of the decreased production of coal and zinc the total value of the mineral products of Colorado decreased from $58,167,399 in 1912 to $54,294,281 in 1913.

TRANSPORTATION. The total railway mileage in the State for the year ending Dec. 31, 1914, was 5579. Of this, 4255 was standard gauge, and 1323 was narrow gauge. The roads having the longest mileage of standard gauge track are as follows: Denver and Rio Grande, 986; Union Pacific, 587; Atchison, Topeka and Santa Fe, 512. The Denver and Rio Grande had also 592 miles of narrow gauge and the Colorado and Southern had 548 miles of narrow gauge. The only construction during the year was done by the Denver and Salt Lake Railroad Co., which began operation during December, 1913, with 40 miles of new track from Steamboat Springs to Craig.

FINANCE. The funded debt of the State on Nov. 30, 1912, consisted of two series of bonds, both issued for funding purposes—one to fund indebtedness of the State incurred in suppressing the Leadville riots and protecting the State during the years 1896 and 1897, the other for the purpose of redeeming the outstanding certificates and other evidence of indebtedness resulting from the insurrection of 1903 and 1904. The per capita debt in 1912 was $3.70. The receipts from all sources for the fiscal year 1913 amounted to $3,580,445, and the disbursements for the same period $3,837,423.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the State Home for Children, Soldiers' and Sailors' Home, Workshop for the Blind, State Hospital for the Insane, State Home for Mental Defectives, Boys' Industrial School, Girls' Industrial, State Penitentiary, and State Reformatory. The Legislature appropriates annually about $1,000,000 for the support and improvement of these institutions.

POLITICS AND GOVERNMENT. There was no regular session of the State Legislature in 1914, as the sessions are biennial and the last was held in 1913. There was, however, a special session called in May to attempt to deal with the mine strike situation. The troubles in the southern coal fields of the State, which are discussed more fully in the article STRIKES, took on a national importance during the year as a result of the apparent inability of the State authorities to control the situation and prevent riot and bloodshed. As noted above, the Legislature met in special session and passed measures to defray the expenses of State troops and guards. The Senate, on May 15, rejected by a vote of 26 to 4 a resolution calling for the resignation of Governor Ammons for incompetency in dealing with the strike. As it was evident that the local authorities could not control the situation, President Wilson on April 28 ordered Federal troops to Colorado to prevent fighting between the State militia and the striking coal men, which troops remained in the State throughout the year.

In the primaries held on September 8, Senator Thomas, Democrat, was renominated for the United States Senate, and Thomas M. Patterson for Governor. The Republicans nominated Samuel D. Nicholson for Governor, and George A. Carleson for the Senate. Progressive nominations were Ben Griffith for Senator and E. P. Costigan for Governor. The Democrats in their State convention condemned violence, whether by corporations or labor organizations; favored local option in the prohibition of the liquor traffic, and the rigid enforcement of all laws and ordinances for its regulation. The Republican platform contained the plank: "We do not oppose any union of either capital or labor when organized to accomplish lawful objects by lawful means, but beyond this they must not go." The platform also demanded the adoption of an amendment to the Federal Constitution, insuring votes for women; liberal appropriations for good roads; the preservation of the rights of the States to the waters of the streams that are within their borders; invited the immigration to the State of industrious, honest, and healthy residents of Europe; demanded that the vicious and ignorant temporary sojourners be discouraged; and that those who refused to become American citizens be denied employment by individuals and corporations doing business in the State.

In the election on November 3, Senator Thomas was reëlected, but the Democratic State administration overturned. George A. Carleson, Republican, was elected Governor, largely as a result of promises made by him to deal firmly with the strike situation. The State voted by a small majority for constitutional prohibition.

STATE OFFICERS, 1915. Governor, George A. Carleson; Lieut.-Governor, Moses E. Lewis; Secretary of State, John E. Ramer; Treasurer, Allison Stocker; Auditor, Harry E. Mulnix; Adjutant-General, ————; Attorney-General, J. Fred Farrar; Superintendent of Public Instruction, Mary C. C. Bradford—all Republicans except Farrar and Bradford, Democrats.

SUPREME COURT: Chief Justice, George W. Musser, Dem.; Justices, S. H. White, Dem.; W. A. Hill, Dem.; M. S. Bailey, Dem.; William H. Gabbert, Rep.; Tully Scott, Dem.; James E. Garrigues, Rep.; Clerk, James R. Killian, Dem.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	24	48	72
Republicans	11	17	28
	—	—	—
Democratic majority	13	31	44

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

COLORADO, UNIVERSITY OF. A State institution of higher learning, founded at Boulder, in 1876. The students enrolled in the several departments of the university in the autumn of 1914 were 1280, and the faculty numbered 200 The most notable change in the faculty during the year was the resignation of James H. Baker as president, and the appointment of Livingston Farrand, M.A., LL.D., as his successor. The Denison Memorial building, valued at $22,000, was donated to the university for medical research. The present yearly income is $300,000. The library contains 80,000 volumes.

COLORED METHODISTS. See METHODISTS, COLORED.

COLOR PHOTOGRAPHY. See PHOTOGRAPHY.

COLQUHOUN, ARCHIBALD ROSS. An English traveler and author, died in December, 1914. He was born on board a ship off the Cape of Good Hope in March, 1848, and was educated in Scotland and on the Continent. He held various government appointments in India, Burma, and Siam; in 1881–82 helped to locate the best route for a railroad between China and Burma; served as correspondent of the London *Times* during the Franco-Chinese War (1883–84); and in 1885–89 was deputy commissioner of Upper Burma. Shortly after he had been transferred to Baluchistan, criticism of superiors brought his career as an official to a sudden halt. Instead of retiring, he accompanied Cecil Rhodes's pioneer force to Mashonland, of which he was administrator in 1890–92. He visited Central America in 1895 to examine the Panama and Nicaragua canal routes, and wrote *The Key to the Pacific* (1895). His best work, *China in Transformation* (1898), is the result of a visit to China in connection with railroad construction plans. He continued to travel throughout the rest of his life, visiting Siberia, China, Japan, the Philippines, South Africa, the United States, and Panama again in 1913. His publications include: *Across Chrysê* (2 vols., 1883); *The Opening of China* (1884); *Amongst the Shans* (1885); *English Policy in the Far East* (1885); *The "Overland" to China* (1900); *Russia Against India* (1900); *The Renascence of South Africa* (1900); *The Mastery of the Pacific* (1902); *Greater America* (1904); *The Afrikander Land* (1906); *The Whirlpool of Europe: Austria-Hungary and the Hapsburgs*, with Mrs. Colquhoun (1907); *From Dan to Beersheba: Reminiscences of Public Service* (1908); *1912?: Germany and Sea Power* (1909); *China in Reformation* (1912).

COLUMBIA UNIVERSITY. An institution of higher learning, founded in New York City in 1754. The total number of students enrolled in all departments in the autumn of 1914 was 14,098, and the faculty numbered 2907. During the year 1914 the Faculty of Fine Arts was abolished. Several noteworthy benefactions were received during the year; among these was an anonymous gift of $250,000 for the endowment of a new Faculty of Fine Arts; $200,000 from Mrs. William Bayard Cutting for the establishing of a traveling scholarship fund; $175,000 from the estate of Joseph Pulitzer for the School of Journalism; and $100,000 from the estate of Francis Furnald. The amount of productive funds is $30,771,868. The library contains 550,000 volumes exclusive of unbound pamphlets and 75,000 German dissertations. The president is Nicholas Murray Butler, LL.D.

COLUMBUS, OHIO, CHARTER. See MUNICIPAL GOVERNMENT.

COMETS. See ASTRONOMY.

COMITÉ NATIONAL DE SECOURS. See RELIEF FOR WAR VICTIMS.

COMMERCE. For foreign trade, see UNITED STATES and articles on foreign countries; for internal trade, see UNITED STATES and articles on INDUSTRIES, and FINANCIAL REVIEW.

COMMERCE COMMISSION, INTERSTATE. See RAILWAYS, *passim*.

COMMERCE COURT. See RAILWAYS.

COMMISSION ON INDUSTRIAL RELATIONS. See INDUSTRIAL RELATIONS COMMISSION; and LABOR LEGISLATION.

COMMISSION PLAN. See MUNICIPAL GOVERNMENT.

COMORO ISLANDS. See MAYOTTE.

COMPENSATION FOR WORKMEN. See WORKMEN'S COMPENSATION.

CONCILIATION, INDUSTRIAL. See ARBITRATION AND CONCILIATION, INDUSTRIAL; and STRIKES.

CONCRETE. The extensive use of concrete, which increased in 1914, naturally gave rise to continued discussion and critical examination of cases where failures were reported or where concrete structures had been submitted to unusual fire conditions. Safety under load and durability under ordinary conditions had long been established for concrete, and its selection as a structural material had reached the point where it was governed by questions of economic adaptability. The fire in the Edison Works at West Orange, N. J., demonstrated the advantages of such construction presenting, as it did, the severe action of the intense heat evolved by the highly combustible contents of the buildings. The concrete structures, compared with the adjoining brick and steel buildings, demonstrated their superiority, and the examination made at the end of the year showed that a relatively small amount of repair would be needed for the concrete structures themselves, though, of course, their contents were utterly destroyed. See FIRE PROTECTION.

A notable series of tests of reënforced concrete dealing with the bond between concrete and steel, and with the theoretical structural consideration in the design of flat-slab floors, with various specimens for the standardization of tests, were in progress during the year. The Bureau of Standards at Washington continued its tests for the Government, carrying on important investigations in concrete road building, and made active progress during the year, while the usual number of concrete buildings were erected. The most notable concrete construction in progress was the important group of buildings for the Massachusetts Institute of Technology at Cambridge, Mass., which, if placed in line end to end would extend over 2500 feet. Various dry docks, piers, subways, aqueducts, bridges, viaducts, and other engineering structures were built during the year, and an important development was the use of reënforced concrete for stadiums for athletic contests. The Yale Bowl and the Princeton and Michigan stadiums were completed, while similar structures for Lehigh University and the College of the City of New York were in progress. See CEMENT.

CONDENSED MILK. See DAIRYING.

CONGO, BELGIAN. A Belgian colony in central Africa, formerly the Congo Free State under the sovereignty of the king of the Belgians, annexed to Belgium by treaty of Nov. 28, 1907, which was approved by the Belgian Parliament in August, 1908, and by the king the 18th of the following October. Capital, Boma.

AREA AND POPULATION. The statistics cited in this article are derived from the report of the Belgian colonial minister. In the table below are given the administrative divisions, the area in square kilometers, the white population Jan. 1, 1912, and the chief town of each division:

Div.	*Sq. km.*	*Pop.*	*Capital*
Lower Congo	40,110	1,062	Boma
Middle Congo	54,990	510	Léopoldville
Kwango	141,710	215	Bandundu
Lac Léopold II.....	127,950	62	Inongo
Equateur	243,310	226	Coquilhatville
Bangala	128,910	178	Lisala
Ubangi	60,270	56	Libenge
Uele	219,790	278	Niangara
Aruwimi	66,190	111	Basoko
Stanleyville	456,430	540	Stanleyville
Kasai	365,230	467	Lusambo
Katanga	460,110	1,760	Kongolo
Total	2,365,000	5,465	Boma

Katanga is a vice-government-general. There are no official estimates of the native population; unofficial estimates vary from nine to twenty millions. The natives, principally of Bantu origin, practice gross fetichism.

PRODUCTION AND COMMERCE. The chief products are shown in the list of exports, rubber leading in importance. In the table below are shown imports and exports, total general trade, values in thousands of francs:

	1908	*1909*	*1910*	*1911*	*1912*
Imports ...	32,271	28,482	48,979	58,385	61,864
Exports ...	56,867	78,014	95,599	78,955	83,465

Imports in the 1912 trade, special and general, were as follows: Arms, ammunition, etc., 921,155 francs special and 1,148,178 francs general; steamers and ships, 3,503,892 and 3,993,120; machinery, 5,659,155 and 6,018,653; iron, steel, copper, 7,497,241 and 7,674,657; wines, spirits, 2,902,768 and 3,608,987; provisions, 8,101,570 and 9,582,697; apparel, 3,403,723 and 4,144,153. Exports of the principal products in the special trade are shown in the table below for comparative years, 1901–05 yearly average for the period, in thousands of francs:

	1901-5	*1910*	*1911*	*1912*
Rubber	44,056	51,016	34,427	34,519
White copal	739	3,348	1,314	6,885
Ivory	4,284	6,056	5,683	5,552
Copper	....	....	1,834	4,112
Gold	140	2,515	3,119	3,832
Palm nuts	1,489	2,657	2,879	2,771
Palm oil	986	1,798	1,732	1,258
Cacao	150	1,071	896	1,115

Imports in 1912 to the value of 35,785,348 francs came from Belgium, and exports valued at 53,883,269 francs went to Belgium; United Kingdom, 5,670,133 francs imports and 557,920 francs exports; Germany, 4,078,710 imports; France, 1,143,738 imports; Netherlands, 1,113,487 imports and 1,172,345 exports, etc. There were entered at the ports in the 1912 trade, 705 vessels of 1,044,864 tons.

There were in the country Jan. 1, 1912, 1235 kilometers of railways in operation. Telephone lines, 1843 km., with 2704 km. of wires, and 19 telegraph stations. The telephone systems had 3181 kilometers of wires. Post offices, 50.

FINANCE AND GOVERNMENT. Revenue and expenditure for comparative years are given below, 1913 and 1914 being budget estimates, amounts in thousands of francs: .

	1910	*1911*	*1913*	*1914*
Revenue	38,517	40,870	40,418	80,451
Expend.	40,371	*59,658	50,988	†68,076

* Including 12,222,443 francs extraordinary. † Including 11,139,573 francs extraordinary.

Including the loans of April 15, and Dec. 26, 1912, the total public debt stood at 278,747,200 francs. The colony is administered by a governor-general, with a commissioner at the head of each district.

The Cape to Cairo Railway during 1914 had reached the heart of the Belgian Congo, where were located valuable copper deposits, which it was thought would prove of substantial commercial value.

CONGO, FRENCH. The former name of a French dependency. The name was changed in 1910 to French Equatorial Africa (q.v.).

CONGO FREE STATE. See CONGO, BELGIAN.

CONGREGATIONALISM. According to the Congregational Year Book for 1914, the total membership of this denomination in 1913 was 750,193; there being 6096 churches, 6066 ministers, and in the Sunday schools 70,460 pupils. There were 3012 young people's organizations with 123,912 members. The total contributions to all branches of the work of the denomination in 1913 amounted to $2,378,702, and the total expenditures amounted to $10,174,335.

The national societies include the Congregational Educational Society, the American Congregational Association, the American Board of Commissioners for Foreign Missions, the Congregational Home Missionary Society, the American Missionary Society, the Congregational Church Building Society, the Congregational Board of Ministerial Relief, the Congregational Sunday School and Publishing Society, the Woman's Home Missionary Federation, and the Woman's Board of Missions. Foreign missions are under the control of the American Board of Commissioners of Foreign Missions, which expended in 1913, $1,103,163. There were in 1913, 615 American missionaries connected with 113 stations in practically all parts of the world. Home missions are carried on by the Congregational Home Missionary Society, in 26 States and Territories, the total receipts for home missions in 1913 amounting to $274,803. In 1913 there were 1707 missionaries under commission for a whole or a part of the year. The theological seminaries are: Andover Theological Seminary at Cambridge, Mass., and Atlanta, Bangor, Hartford, Chicago, Oberlin, Talladega, Pacific, and Gale. The social work of the Church is in the hands of the Social Service Commission of the Congregational Church, which is a development from the work of the Department of Labor and Social Service of the Congregational Brotherhood of America. The general administration of the Church is in the hands of the National Council. The officers of the council in 1913 were: Rev. Charles Reynolds Brown, D.D., moderator; Rev. Hubert C. Herring, D.D., secretary; and Rev. Joel S. Ives, treasurer.

CONGREGATIONAL METHODIST CHURCH. There were in this denomination in 1913, 15,529 communicants, 333 churches, and 337 ministers. The denomination is strongest in the Southern States. It maintains a publishing house at Ellisville, Miss. The Atlanta Bible School is the only educational institute under its auspices. The official organ is *The Messenger*, published in that city. See also RELIGIOUS DENOMINATIONS AND MOVEMENTS.

CONGRESS OF THE UNITED STATES. See UNITED STATES.

CONNECTICUT. POPULATION. The estimated population of the State on July 1, 1914, was 1,202,688. In 1910 the population was 1,114,756.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	61,000	786,000	$2,497,000
	1913	61,000	608,000	......
Oats	1914	11,000	319,000	175,000
	1913	11,000	303,000	169,000
Rye	1914	7,000	188,000	180,000
	1913	7,000	135,000	124,000
Potatoes	1914	24,000	3,360,000	2,184,000
	1913	24,000	2,208,000	1,921,000
Hay	1914	375,000	*a* 469,000	9,146,000
	1913	379,000	432,000	8,688,000
Tobacco	1914	20,200	*b* 35,754,000	6,614,000
	1913	18,400	28,520,000	5,989,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. The mineral production of the State in 1913 was valued at $3,795,297, a record figure. The products include limestone, feldspar used in the manufacture of pottery, granite, trap rock, red sandstone, marble, brick, mineral waters, quartz, and precious stones.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include Fitch's Home for the Soldiers' and Sailors' Hospital, at Noroton Heights; Connecticut Hospital for the Insane, at Middletown; Norwich State Hospital for the Insane; Connecticut State Prison, at Wethersfield; Connecticut School for Boys, at Meriden; Connecticut Industrial School for Girls, at Middletown; Connecticut Colony for Epileptics, at Mansfield; and the Connecticut School for Imbeciles, at Lakeville.

EDUCATION. The total school population of the State in 1913 was 255,692. There were enrolled in the public schools 197,852 pupils, and the average daily attendance was 155,235. There were 5130 female teachers and 361 male teachers, with an average salary of $125 monthly for male teachers, $57.87 for female teachers. The Legislature of 1913 provided for the codification of the school laws and for vocational guidance in schools. Provision was also made for the organization in each town of a model school for the observation and instruction of a training class for teachers.

FINANCE. The funded debt of the State on Sept. 30, 1912, consisted of one bond of an old issue on which the interest had ceased, and two series of bonds bearing interest; one amounting to $3,064,000, for public buildings and highways, and the other, $4,000,000, for miscellaneous purposes. The total receipts for the fiscal year 1913 were $7,192,045. The expenditures, including bonds and temporary loans, amounted to $9,062,857. The expenditures in excess of receipts amounted to $1,870,812. The net debt at the end of the fiscal year 1913 was $6,748,688. The per capita debt in 1912 was $6.12.

TRANSPORTATION. The total mileage of single track railroad in the State in 1914 was 992. There were in addition 328 miles of second track, 47 miles of third track, and 47 miles of fourth track. The longest mileage was that of the New York, New Haven, and Hartford, 1269; the Central New England Railway, 88; and the Central

Vermont, 80. During the year the New York, New Haven, and Hartford double-tracked its line between Berkshire Junction and New Milford, and eliminated several grade crossings, and electrified portions of its track, especially freight lines and sidings.

POLITICS AND GOVERNMENT. The Legislature did not meet in 1914, as the sessions are biennial and the last was held in 1913. The only important political events were connected with the State elections and the election of United States Senator. Governor Baldwin early in the year announced his candidacy for the United States Senate to succeed Senator Brandegee, who was a candidate for reëlection. The Republicans in their State convention endorsed their allegiance to the Republican policy of protection. Marcus H. Holcomb was nominated for Governor, and Senator Brandegee was renominated for the Senate. The Democratic platform endorsed the Democratic administration of national affairs under President Wilson and declared for a direct primary law, nominations by petition, and the initiative and referendum. The party also pledged itself to support the submission of a constitutional amendment providing for woman suffrage. Lyman T. Tingier was nominated for Governor and Simeon E. Baldwin for the Senate. The Progressive party endorsed the national platform of the party adopted in Chicago on Aug. 7, 1912; advocated the establishment of presidential primaries, the extension of suffrage to women, and the limit of election expenses in proportion to the size of the constituency. Herbert Knox Smith was nominated for the United States Senate and W. C. Fisher for Governor. In the election on November 3, the Republicans carried the State and elected Judge Marcus Holcomb for Governor. The vote was as follows: Holcomb, Republican, 91,241; Tingier, Democrat, 73,888; Fisher, Progressive, 8030. As a result of the election the State Senate was changed from Democratic to Republican. Five Democratic Congressmen were defeated. Senator Brandegee was reëlected, receiving 89,983 votes, compared with 76,081 votes for Governor Baldwin.

STATE OFFICERS, 1915. Governor, Marcus H. Holcomb; Lieutenant-Governor, Clifford B. Wilson; Secretary of State, Charles D. Burnes; Treasurer, Frederick S. Chamberlain; Attorney-General, George E. Hinman; Commissioner of Insurance, Burton Mansfield—all Republicans except Mansfield, Democrat.

SUPREME COURT: Chief Justice, Samuel O. Prentice, Rep.; Associate Justices, George W. Wheeler, Dem.; John M. Thayer, Dem.; Alberto T. Roraback, Rep.; John K. Beach, Dem.; Clerk, George A. Conant, Rep.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	80	197	227
Democrats	5	59	64
Republican majority	25	188	168

The representation in Congress will be found in the section *Congress*, article UNITED STATES.

CONSERVATION. See IRRIGATION; FORESTRY; LAND, PUBLIC; DRAINAGE; and ALASKA.

CONSERVATION OF FOOD. See AGRICULTURE.

CONSULAR SERVICE. See CIVIL SERVICE.

CONSUMPTION. See TUBERCULOSIS.

CONTAGIOUS DISEASES. See VITAL STATISTICS.

CONTRABAND OF WAR. The peculiar position of the United States, as the one great nation not involved or likely to be involved in the present European war, renders the question of contraband one of great importance. The failure of many governments, including our own, to ratify the Declaration of London of 1909 has left the subject of contraband very much where it has always been (consult CONTRABAND in second edition of the NEW INTERNATIONAL ENCYCLOPÆDIA), the general conditions being briefly as follows:

Goods in transit to the open ports of a belligerent country are placed in three categories:

1. *Free.* All goods which cannot be used for war purposes.
2. *Contraband.* Goods which are used for war purposes.
3. *Occasional Contraband.* Goods which may be contraband or not, according to the use to which they are put.

It is not improper for a citizen of a neutral country to deal in contraband goods or transport them; nor does he compromise his government by so doing; nor are the officials bound to interfere to prevent contraband trade. But if contraband goods are seized by a belligerent when bound to the territory of an enemy, the owner must submit to their condemnation. All other goods on board belonging to such owner are also subject to forfeiture; in addition, the vessel if he owns it, or any share that he may own may be declared forfeited by the prize court. The vessel is not ordinarily subject to condemnation unless some fraud is proved, or the voyage was chiefly undertaken for the purpose of carrying the contraband. The rule of the Declaration of London is that all neutral vessels are subject to condemnation if contraband goods constitute more than half the cargo, measured either by value, weight, volume, or freight.

Any neutral vessel may be seized by the warship of a belligerent power upon reasonable proof that she is carrying contraband of war. If she is innocent, the captors are liable for damages; if she carries any contraband, she must pay the costs of the prize court procedure even if released.

The doctrine of *continuous voyage* has been applied to contraband goods sent through neutral countries and is a source of much trouble, dispute, litigation, and diplomatic wrangling. It means that contraband goods sent to a belligerent destination via a neutral port or country are liable to seizure in any part of the transit outside of neutral territory if the belligerent destination can be proved. The Declaration of London provides that conditional contraband is not subject to seizure except when bound for an enemy's port or to his armed forces unless the enemy has no seaboard; and the papers of a vessel carrying conditional contraband are conclusive proof of the port of discharge and of the voyage unless fraud is shown.

Notwithstanding the fact that the Declaration of London was not ratified by Great Britain, her government has acquiesced in most of its provisions and they are likely to be carried out in the present war unless the warships of Germany (whose attitude is not yet definitely known) should succeed in breaking through the British fleet in such numbers as to render their action important.

Among the debatable features of contraband of war are the divisions of goods into the various categories. Each belligerent usually makes out and publishes his own lists of what he regards as free goods, occasional contraband, and contraband. Neutrals frequently protest and sometimes force or persuade the belligerent to give way in certain particulars. In order to reduce the causes for friction the Declaration of London promulgated lists of articles which may be considered (1) contraband, (2) occasional contraband, (3) never contraband.

Early in October the British government published its lists of absolute contraband and occasional contraband. These lists are given below. The paragraphs are identical with those of the Declaration of London except as regards: first, those marked (a) which the Declaration includes under conditional contraband; second, those marked (b) which it includes under free goods; and third, those marked (c) which are not specifically given in the Declaration.

BRITISH OFFICIAL LISTS

(1) Absolute Contraband:—

Arms of all kinds, including arms for sporting purposes and their distinctive component parts.
Projectiles, charges, and cartridges of all kinds and their distinctive component parts.
Powder and explosives specially prepared for use in war.
(c). Sulphuric Acid.
Gun mountings, limber boxes, limbers, military wagons, field forges, and their distinctive component parts.
(c). Range finders and their distinctive component parts.
Clothing and equipment of a distinctively military character.
Saddle, draught, and pack animals suitable for use in war.
All kinds of harness of a distinctively military character.
Articles of camp equipment and their distinctive component parts.
Armor plates.
(b) Hæmatite iron ore and hæmatite pig iron.
(b) Iron pyrites.
(b) Nickel ore and nickel.
(b) Ferro-chrome and chrome ore.
(b) Copper, unwrought.
(b) Lead, pig, sheet, or pipe.
(b) Aluminum.
(b) Ferro-silica.
(a) Barbed wire and implements for fixing and cutting same.
Warships, including boats and their distinctive component parts of such a nature that they can be used on a vessel of war.
(a) Aëroplanes, air ships, balloons, and air craft of all kinds and their component parts, together with accessories and articles recognizable as intended for use in connection with balloons and air craft.
(c) Motor vehicles of all kinds and their component parts.
(c) Motor tires, rubber.
(a) Mineral oils and motor spirits except lubricating oils.
Implements and apparatus designed exclusively for the manufacture of munitions of war or for the manufacture or repair of arms or war materials for use on land and sea.

(2) Occasional Contraband:—

Foodstuffs.
Forage and feeding stuffs for animals.
Clothing, fabrics for clothing, and boots and shoes suitable for use in war.
Gold and silver in coin or bullion, paper money.
Vehicles of all kinds, other than motor vehicles, suitable for use in war, and their component parts.
Vehicles, craft and boats of all kinds; floating docks, parts of docks, and their component parts.
Railway materials, both fixed and rolling stock, and materials for telegraphs, wireless telegraphs, and telephones.
Fuel other than mineral oil; lubricants.
Powder and explosives not specially prepared for use in war.
(c) Sulphur.
(c) Glycerine.
Horseshoes.
Harness and saddlery.
(b) Hides of all kinds, dry or wet; pigskins, raw or dressed; leather undressed or dressed, suitable for saddlery, harness, or military boots.
Field glasses, telescopes, chronometers, and all kinds of nautical instruments.

To avoid the delays and annoyances of protracted search, the United States government has suggested to the British that a vessel, which cares to take the trouble should be permitted to get a certificate from the United States authorities guaranteeing her cargo which is placed under seal. This procedure is of a doubtful desirability for many reasons, one or two of which are quite obvious, but there is a prospect that some such arrangements will be made. See War of the Nations.

COOLIDGE X-RAY TUBE. See Radiotherapy and Roentgenology.

COPPER. The mine production of copper in 1913 was 1,235,569,727 pounds, and the smelter production was 1,224,484,098 pounds. The mine production in 1912 was 1,249,094,891 pounds, and the smelter production was 1,243,268,720 pounds. It will be noted from these figures that both the mine and the smelter production showed a slight decrease from that of 1912. The decrease in smelter production was due to abnormal conditions in certain districts. These conditions affected especially the output of the Lake Superior district, where a strike of miners was in progress for over four months of the year. The decrease in Alaska was due to the partial destruction of the plant of the largest producer of that district, and the decrease in Montana resulted in part from unusual conditions. The refinery production of copper in 1913 was the largest in the history of the industry. The sale price in 1913 averaged about one cent a pound less than in 1912.

Perhaps the most notable feature of the industry during the year was the improvement in metallurgy. In many places successful efforts were made to increase the percentage of recovery from ores. This resulted in partial or complete rebuilding of several smelting plants and in important changes and additions to concentrating mills.

Both domestic consumption and export of copper showed an increase in 1913 over 1912, and the stocks of refined copper were small at the end of the year. It was apparent, however, that the producing capacity of the world had increased faster than the consuming capacity. Thus if all the mines made their greatest possible output a surplus of copper would result. It was almost inevitable, however, that the producing capacity of some of the districts would be restricted on account of unusual conditions temporarily prevailing in these districts. Since 1911 the Mexican output was thus curtailed by unsettled political conditions, and the Lake Superior output as noted above was greatly reduced in 1913 by labor conditions.

Twenty-four States and Territories contributed to the copper production of 1913. Three leading States, Arizona, Montana, and Michigan, produced 69 per cent of the total output. The same States produced 72 per cent in 1912. The eight leading States, including Utah, Nevada, Alaska, California, and New Mexico, produced over 96.78 per cent in 1913. Montana continued to rank first in 1913, with nearly one-third of the entire output of the country. Michigan ranked second, with more than 28 per cent, and Arizona third, with over one-fifth the total output. (For details of production in the different States see the paragraphs on minerals under those States.) The accompanying table shows the production of copper in pounds in the United States in 1912–13.

State	*1912*	*1913*
Alaska	31,926,209	23,423,070
Arizona	359,322,096	404,278,809
California	31,516,471	32,492,265
Colorado	7,968,520	9,052,104
Idaho	7,182,185	8,711,490
Michigan	231,112,228	155,715,286
Montana	308,770,826	285,719,918
New Mexico	29,170,400	50,196,881
Nevada	83,418,900	85,209,536
Oregon	311,860	77,812
South Dakota	23,657	4,549
Utah	132,150,052	148,057,450
Washington	1,069,938	782,742
Wyoming	25,080	362,235
Eastern States and unapportioned	19,310,298	20,449,951
Total	1,243,268,720	1,224,484,098

The quantity of copper in unmanufactured form imported into the United States in 1913 was 409,560,954 pounds, compared with 410,240,295 pounds in 1912. The exports of metallic copper from the United States in 1913 amounted to 926,441,142 pounds.

World Production. The world production of copper in 1913 was 2,198,732,130 pounds, compared with 2,259,101,580 pounds in 1912. In 1913 the smelter output of the United States was 55.6 per cent of the world's production, as compared with 55 per cent in 1912. The following table shows the world production by countries. The figures are those compiled by Henry R. Merton & Co. (Ltd.), reduced to pounds, except that the official figures for the production of United States and Canada are inserted.

WORLD'S PRODUCTION (SMELTER OUTPUT) OF COPPER IN 1912 AND 1913, IN POUNDS

(Copper extracted from ore or contained in the ore produced)

Country	*1912*	*1913*
Germany	56,437,760	55,776,380
England	661,380	661,380
Italy	5,070,580	3,527,360
Norway	24,471,060	19,400,480
Austria	8,597,940	8,377,480
Russia	73,854,100	74,735,940
Sweden	8,306,900	2,204,600
Spain and Portugal	132,055,540	120,591,620
Turkey	1,102,300	1,102,300
Hungary	220,460	661,380
Servia	16,314,040	14,109,440
Total Europe	322,092,060	301,148,360
Canada	77,775,600	76,975,832
Mexico	162,479,020	116,402,880
Newfoundland	1,102,300	....
United States	1,243,268,720	1,224,484,098
Total North America	1,484,625,640	1,417,862,810
Argentina	661,380	220,460
Bolivia	8,157,020	8,157,020
Chile	83,554,340	88,184,000
Peru	58,421,900	56,658,220
Venezuela	3,086,400	2,865,980
Cuba	9,700,240	7,495,640
Total Central America and South America	163,581,280	163,581,320
Cape Colony	8,597,940	7,275,180
Namaqualand	5,511,500	5,511,500
Other Africa	22,486,920	37,698,660
Total Africa	36,596,360	50,485,340
Japan	146,826,360	161,376,720
Australia	105,379,880	104,277,580
Grand total	2,259,101,580	2,198,732,130

Production in 1914. The copper production in 1914, according to the estimates of the United States Geological Survey, showed a marked decrease from that of 1913. At an average price of about 13.5 cents a pound, the output in 1914 was valued at $152,400,000, compared with $189,795,000 in 1913. The large decrease in production was due to curtailment of production during the later part of the year on account of the reduction in tonnage exported to Europe. The smelter production of copper in 1914 was estimated at 1,129,000,000 pounds; the output of refined copper from primary sources was 1,403,000,000 pounds, compared with 1,615,067,000 pounds in 1913. The export of copper in all forms for the first eleven months in 1914 amounted to 780,048,777 pounds, compared with an export for the twelve months of 1913 of 926,441,142 pounds. The average price of copper for 1913 showed a decrease from that of the preceding year, being about 13.5 cents a pound, compared with 15.5 cents in 1913. After the outbreak of the European war copper sold considerably below the yearly average, but toward the close of the year the price showed notable improvement.

WORLD'S PRODUCTION OF COPPER (*a*)

From *Engineering and Mining Journal.* Preliminary estimates for 1914

(In Metric Tons of 2204.6 lbs. Avoirdupois)

Country	*1913*	*1914*
United States	555,990	515,164
Mexico	58,323	35,436
Canada	34,880	33,248
Cuba	3,381	6,628
Australasia	(*b*) 47,325	(*e*) 33,782
Peru	25,487	22,876
Chile	39,434	38,270
Bolivia	(*b*) 3,658	(*h*) 3,500
Japan	(*b*) 73,152	(*d*) 68,058
Russia	(*c*) 34,316	(*h*) 32,000
Germany	(*b*) 25,308	(*h*) 28,000
Africa	(*b*) 22,870	25,700
Spain and Portugal	(*b*) 54,696	(*i*) 47,500
Other countries	(*b*) 27,158	(*h*) 28,000
Totals	1,005,978	918,162

(*a*) The statistics in this table are the compilations of the *Engineering and Mining Journal*, N. Y., except where specially noted to the contrary. (*b*) As reported by Henry R. Merton & Co. (*c*) As officially reported. (*d*) Privately communicated to the *Engineering and Mining Journal*, N. Y., from Japan. (*e*) Exports as reported by Henry R. Merton & Co. (*h*) Estimated. (*i*) Communicated through London.

WORLD'S CONSUMPTION OF COPPER

From *Engineering and Mining Journal*

(Metric Tons of 2204.6 lbs. Avoirdupois)

(From statistical report of the Metallgesellschaft, Frankfurt am Main)

Europe	*1912*	*1913*
Germany	231,700	259,300
Great Britain	144,700	140,300
France	98,500	103,600
Austria-Hungary	48,200	39,200
Russia	40,000	40,200
Italy	34,200	31,200
Belgium	15,000	15,000
Netherlands	1,000	1,000
Other European countries	10,200	a 13,300
Total consumption in Europe	623,500	643,100

America	*1912*	*1913*
United States	871,800	848,100
Others in America	8,000	8,000
Total consumption in America.	874,800	851,100
Asia, Australia, Africa		
Production, Japan and Australia	111,900	119,000
Imports from Europe	1,400	1,000
Imports from America	500	80
Total	113,800	120,100
Exports to Europe and America..	78,400	69,800
Consumption in Asia, Australia and Africa	40,400	50,800
World's Consumption	1,088,700	1,044,500
World's production	1,018,600	1,005,900

a Estimated.

In the latter part of 1914 there was a brisk demand for copper metal by agents of various European countries, and large shipments were made with Italian and Scandinavian ports as destination. Great Britain, however, was very active in seizing and detaining such cargoes whenever they were considered by her naval officers as ultimately intended for Germany or Austria; and at the close of the year it was estimated that about 45,000,000 pounds were so detained. On December 24, the American note, one portion of which dealt particularly with such seizures, was transmitted to Great Britain, and it was expected that the matter would be adjusted in a manner satisfactory to both sides. See CONTRABAND OF WAR; METALLURGY; and WAR OF THE NATIONS.

COPYRIGHT. The copyright registrations for the fiscal year (July 1, 1913 to June 30, 1914) numbered 123,154, and included chiefly registrations of books, periodicals, dramatic and musical compositions, works of art and reproductions thereof, photographs, and prints. Of books printed in the United States, 28,591 were registered, books here being understood to include pamphlets, leaflets, and contributions to periodicals. Of books printed abroad in a foreign language there were 2860 registered, and of English books for *ad interim* copyright, 440.

An important amendment (March 28, 1914) to the copyright law demands only one copy, in lieu of two, for deposit to secure registration of a book published in a foreign country, by an author who is a citizen or subject of a foreign state or nation. A ten-cent stamp must now be affixed to copyright certificates in accordance with the war revenue tax (Dec. 19, 1914). A judicial decision concerning copyright books—and one of great importance to publishers—was rendered by the United States Supreme Court in December, 1913, too late for inclusion in the YEAR BOOK for 1913. The reference is to the case of *Macy v. Publishers' Association*. The Court decided that owners of copyrights have no legal right to maintain or to regulate prices of books. This decision would seem to have been based upon the application to books of the provisions of the Sherman act, which was designed to cover an entirely different class of articles, the sale of which proceeds under selling conditions very different from those which are proper to the book trade. The right to control, by regulation, conditions of bookselling can now be secured only through new legislation. The publishers, in protesting against this decision, gave weight to their argument by showing that of the world's book-producing countries the United States stands alone in enjoining its publishers and booksellers from maintaining an organization of the book trade, and from making regulations for the sale of books.

Abroad, in February, 1914, the British Copyright Act of 1912 was confirmed, with a few modifications, by India, as it was in April, 1914, by New Zealand.

CORDIALS. See LIQUORS.

CORN. A general review of the world corn crop published by the United States Department of Agriculture points out that in round numbers 130,000,000 acres are planted to corn in the principal producing countries of North and South America, and that of this area 105,000,000 are in the United States, 13,000,000 in Mexico, 10,000,000 in Argentina, and nearly 1,000,000 acres in Uruguay, Chile, and Canada combined. Attention is called to the increase in corn consumption in the United States by the fact that although the area has been increased by about 25,000,000 acres since 1897, the exports, which reached the maximum of 189,000,000 bushels in that year, have steadily declined and amounted to only 45,000,000 bushels in 1913, offset to the extent of over 5,000,000 bushels by imports from Argentina. The importations from Argentina from July 1, 1913, to Feb. 13, 1914, as reported by Bradstreet's, amounted to 7,132,980 bushels, of which about 85 per cent went to the Atlantic seaboard, and the remainder to Gulf ports. The area in corn in Argentina increased from 3,000,000 acres in 1900, to 10,250,000 acres in 1914, and of the record crop of 296,000,000 bushels produced in 1912, 190,000,000 bushels were exported.

The principal corn-growing regions of the Eastern Hemisphere are in southern Europe, Asia, and northern and southern Africa. The corn belt of southern Europe produces annually from 600 to 700 million bushels on about 30,000,000 acres. The leading corn-producing section of Europe, comprising Austria-Hungary, Rumania, Servia, Bulgaria, and Southern Russia, plants annually more than 20,000,000 acres and has a normal yield of about 500,000,000 bushels The acreage devoted to corn in Hungary and Bulgaria is second only to wheat, and in Rumania and Servia corn is the leading cereal. In Asia the crop is grown in Turkey, Southern Asiatic Russia, British India, French Indo-China, the Philippines, China, and Japan. Asiatic Turkey cultivates nearly 1,000,000 acres, British India over 6,000,000, the Philippines over 1,000,000, and Japan over 130,000 acres annually. In Africa, Egypt, the principal producing country, grows nearly 2,000,000 acres, and the yearly production in southern Africa now amounts to more than 30,000,000 bushels. Small areas are devoted to corn culture in Tunis, Algeria, Tripoli, and Morocco. Australia and New Zealand also produce corn on a small scale.

The world's corn production, according to data published by practically all important corn-producing countries, has ranged in recent years from 3½ to 4 billion bushels, or about equal to the production of wheat. The estimates of production for different countries in 1914 indicated a normal crop. Probably as the result of the disturbed political conditions, data on corn production in some of the south European countries were not available. The estimated production and acreage of some of the more important corn-growing countries were given as follows: Rumania 111,850,000 bushels and 5,121,500 acres, Italy 102,600,000 bushels and 3,705,000 acres, European Russia 72,307,000 bushels and 3,891,200 acres, Spain 28,740,000 bushels and 1,064,000 acres, and Japan 3,760,000 bushels and 141,037 acres. The average yields reported for the different countries ranged from 37½ bushels per acre in Switzerland, which has but a small acreage, to about 18½ bushels in European Russia. In Canada corn is grown more extensively for the silo than for grain production. In 1914 the Province of Ontario, which produces over 90 per cent of the country's crop, cultivated 290,817 acres for grain and 418,105 acres for silage, the latter area yielding over 4,750,000 tons, or over 11¼ tons per acre.

As reported by the Department of Agriculture, the United States in 1914 produced a total of 2,672,804,000 bushels on 103,435,000 acres, the average acre-yield being 25.8 bushels. In 1913 the production amounted to 2,446,988,000 bushels, the acreage to 105,820,000 acres, and the average yield was 23.1 bushels per acre. The value of the 1914 crop based on a bushel value of 63.7 cents, the average price received by farmers December 1, reached $1,702,599,000, as compared with $1,692,092,000, the value of the preceding crop based on a corresponding value of 69.1 cents per bushel. Dry weather interfered in some sections, and particularly in the corn surplus States, notably in Illinois, Missouri, and Indiana, where the crop was much reduced. However, rains coming late in the season effected an improvement in the development of the crop and its maturity. As reported by *American Agriculturist*, Iowa, the leading State, produced 377,733,000 bushels on 10,209,000 acres, and was followed by Illinois with a production of 298,816,000 bushels on 10,304,000 acres, Nebraska 177,528,000 bushels on 7,397,000 acres, Missouri 161,744,000 bushels on 7,352,000 acres, Indiana 157,128,000 bushels on 4,929,000 acres, Ohio 148,356,000 bushels on 3,804,000 acres, Texas 127,300,000 bushels on 6,700,000 acres, Kansas 115,704,000 bushels on 6,428,000 acres, and Kentucky 101,472,000 bushels on 3,624,000 acres. The highest average acre yields reported were 39 bushels for Ohio, 40 bushels for New York, and 44 bushels for Pennsylvania. The percentage of old corn in farmers' hands Nov. 1, 1914, was less than usual, being only 2½ per cent of the preceding year's crop, or about 62,000,000 bushels, while on the corresponding date in 1913 it was more than twice that quantity.

CORNELL UNIVERSITY. An institution of higher learning, at Ithaca, N. Y., founded in 1865. The enrollment in all departments in the autumn of 1914 was 6496, divided as follows: College of Arts and Sciences, 1536; College of Agriculture, 1920; College of Architecture, 191; College of Civil Engineering, 623; College of Mechanical Engineering, 1110; College of Law, 344; College of Veterinary Science, 168; College of Medicine, 130; Graduate School, 150. The faculty numbered about 760. During the year 1913–14 three members of the faculty died; these were Prof. Lucien Augustus Wait, Sept. 6, 1913; Prof. John Robert Sitlington Sterrett, June 15, 1914; and Prof. Ralph Charles Henry Catterall, Aug. 3, 1914. Two professors retired under the age rule; these were John Henry Comstock of the department of entomology, and Charles De Garmo, head of the department of education. Prof. James Edwin Creighton was appointed dean of the Graduate School for a term of three years to succeed Prof. Ernest Merritt, retired, and Dr. Beverly Thomas Galloway, formerly Assistant Secretary of Agriculture of the United States, was appointed director of the College of Agriculture and of the agricultural experiment station. The Jacob H. Schiff lectureship in German Culture was occupied in 1913–14 by Prof. Ernst Elster of the University of Marburg, and Dr. Artur Weese, professor of the history of art in the University of Berne, Switzerland, was appointed lecturer on this foundation for 1914–15. He will lecture on German art. The Goldwin Smith lectureship for 1914–15 was filled by the appointment of Dr. Roscoe Pound, Carter professor of jurisprudence in the Law School of Harvard University, who will lecture on "Modern Justice" with special relation to the social and industrial questions of the present day. The chief financial event in the history of the university for the year 1913–14 was the endowment of the Medical College in New York City. Securities of the value of $4,350,000 and producing an income of somewhat over $200,000 were handed over to the trustees of the university by a donor whose name is withheld. The productive funds of the university amounted at the end of the year 1913–14 to $13,973,542. The library contains about 440,000 volumes. The president is Jacob Gould Schurman.

CORPORATIONS. See TRUSTS, and TAXATION.

CORPORATION TAX. See TAXATION.

COSTA RICA. A Central American republic between Nicaragua and Panama. The capital is San José.

AREA, POPULATION, ETC. The area of the republic has been estimated at 48,410 square kilometers (18,691 square miles). The boundary dispute between Costa Rica and Panama was submitted, under a convention of March 17, 1910, to the arbitration of the Chief Justice of the United States. The decision of the Chief Justice, announced Sept. 12, 1914, was favorable to Costa Rica; so that, if the boundary described by the arbitration becomes established in fact, the area of Costa Rica will exceed the figure given above. (See PANAMA.) The population at the end of 1911 was estimated at 388,266; 1912, 399,424; 1913, 410,981. The recorded births and deaths in 1911 were 16,839 and 9483, respectively; in 1912, 17,125 and 9378; in 1913, 17,746 and 9382. The excess of recorded immigrants over recorded emigrants in 1912 was 1360; in 1913, 2328. The population of San José at the end of 1913 was stated at 33,900; Alajuela, 6260; Cartago, 7000; Heredia, 8000; Limón, 7000; Puntarenas, 4850. The white population dwells largely in these towns. In 1912, there were 402 public elementary schools, with 1191 teachers, an enrollment of 31,407 pupils, and an average attendance of 27,680. In 1914 the public schools were reported to number 414, of which 30 were for boys, 30 for girls, and 354 for both sexes. There are a few secondary schools.

PRODUCTION AND COMMERCE. The principal crops are bananas and coffee, but of considerable importance also are corn, sugar, beans, potatoes, rice, and cacao. There were about 11,171,000 coffee trees in Costa Rica in 1913; the area under bananas was 95,400 acres. Cattle raising is important. Gold and silver are mined.

Total imports and exports in 1913 were reported at 18,677,653 and 22,196,921 colones, respectively, as compared with 21,675,928 and 21,427,966 in 1912, 19,079,917 and 19,191,808 in 1911, and 16,984,378 and 18,009,385 in 1910 (the value of the colon in United States money being 46.5 cents). The principal imports are cotton goods, structural iron and steel and railway material, coal, flour, and lard. Bananas and coffee make up the bulk of the exports. The number of bunches exported has been as follows: In 1909, 9,365,690; in 1910, 9,097,285; in 1911, 9,309,586; in 1912, 10,647,702; in 1913, 11,170,812. By far the greater part of the bananas go to the United States, to which in 1913 were sent from Costa Rica 8,354,722 bunches, while to the United Kingdom were sent 2,713,111 bunches. The coffee export during crop years ended September 30 is reported as follows, in metric tons: In 1909, 12,030; in 1910, 14,397; in 1911, 12,641; in 1912, 12,238; in 1913, 13,019. Of the 1913 export, 82 per cent was consigned to the United Kingdom, 8 per cent to Germany, 6 per cent to the United States, and 3 per cent to France. The value of the banana and coffee exports, respectively, were: 9,365,690 and 5,677,146 colones in 1909; in 1910, 9,097,285 and 5,916,181; in 1911, 9,309,586 and 6,109,542; in 1912, 10,647,702 and 7,623,561; in 1913, 11,170,812 and 7,752,750. The export of gold and silver bullion in 1911 amounted to 2,517,372 colones; in 1912, 1,625,117; in 1913, 1,827,553. Export of cabinet woods: in 1911, 193,732; in 1912, 265,483; in 1913, 304,003. The share per cent of the trade by countries is as follows:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United States	50.46	51.44	49.90	50.77
Germany	17.24	15.44	5.55	4.89
United Kingdom	15.95	14.85	41.64	41.83
France	4.86	4.46	1.30	.93
Central America	3.82	4.03	.48	.38
Spanish America	1.48	3.50	.70	.58
Other	6.19	6.28	.48	.62

Most of the trade passes through the port of Limón. In 1912, the reported entrances at Limón were 538 vessels, of 1,129,606 tons; at Puntarenas, 87 vessels, of 178,904 tons.

COMMUNICATIONS. The total length of railway in operation in 1911 was 687 kilometers (431 miles). Some subsequent extensions have been made into the banana lands. Daily passenger trains each way are run between San José and Limón, on the Atlantic coast, and San José and Puntarenas, on the Pacific. Telegraphs in 1912: 134 offices, with 2447 km. of wire; a radiotelegraph station is in operation at Limón; post offices, 204.

FINANCE. The standard of value is gold. The monetary unit is the colon, par value 46.536 cents. Revenue and expenditure for three years and the estimates for 1915 are shown below:

	1910	*1911*	*1912*	*1915*
Revenue	11,471,967	9,707,269	9,950,672	9,662,000
Expend.	8,858,572	9,801,956	9,810,719	9,661,089

The budget for 1914 placed the revenue at 9,200,000 colones, and the expenditure at 9,013,635. Principal estimated receipts for 1915: customs, 5,600,000 colones; liquors, 2,438,000; Pacific Railway, 772,000; banana export duty, 233,000; posts and telegraphs, 355,000; stamps and sealed paper, 140,000. Principal estimated disbursements for 1915: finance, 3,130,112 colones; public instruction, 1,546,718; fomento, 1,477,747; war, 1,441,459; justice, 387,236. The foreign debt at the end of 1912 amounted to £1,617,200, and 35,000,000 francs.

GOVERNMENT. The executive authority is vested in a president who is elected by indirect vote for four years and is ineligible for the following term. The legislative power devolves upon a congress consisting of a single chamber of 43 deputies, also elected indirectly. The president for the term ending May 8, 1914, was Ricardo Jiménez. In the presidential election of December, 1913, no candidate won a majority in the electoral college. Under the constitution the task of selecting a chief executive devolved upon the congress. The candidates having the highest number of votes in the electoral college were Carlos Durán and Máximo Fernández, but these men withdrew from the contest and on May 1 the congress elected Alfredo González, who was inaugurated May 8, 1914.

HISTORY. Alfredo González, a lawyer and agriculturist from the Province of Heredia, who had been vice-president of Congress under President Jiménez, was elected President of the Republic and inaugurated on May 8. He announced that his policy would be to promote education, to foster agriculture, and to improve the financial situation of the country. He selected the following cabinet: Foreign affairs, Sr. Don Manuel C. Quesada; interior, Juan Rafael Arias; finance and commerce, Mariano G. Carazo; fomento and public works, Alberto Echandi; war, Federico A. Tinoco; education, Luis Felipe González. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

COST OF LIVING. See FOOD AND NUTRITION; and PRICES.

COTTON. The cotton crop of the United States for 1914 was the largest ever produced. From a planted area of 36,960,000 acres, about 1.3 per cent less than that of 1913, the United States Department of Agriculture on Dec. 10, 1914, estimated the production of 15,966,000 bales of 500 pounds each. With the linters estimated on the usual basis, the total crop, it was believed, would be 16,616,000 bales. The United States Bureau of the Census on Dec. 13, 1914, reported 13,977,189 running bales as already ginned. This report included 42,796 round bales, each of which is counted as half a bale, and 71,488 bales of Sea Island cotton. The Sea Island cotton was produced as follows: Florida, 30,586; Georgia, 37,385; South Carolina, 3517 bales. On Nov. 21, 1914, the International Institute of Agriculture at Rome estimated the cotton crops of the United States at 15,340,000 and of India at 4,178,000 bales. No estimates were available regarding the Egyptian crop, but it was reported as slightly below normal.

The crop of the United States for 1913, the estimated crop for 1914, and the amount reported ginned on Dec. 13, 1914, exclusive of linters, by States were:

States	*Crop, 1913 500 lb. bales*	*Estimated crop, 1914 500 lb. bales*	*Reported ginned, Dec. 13, 1914 Running bales*
United States	14,156,486	15,966,000	13,977,189
Alabama	1,495,485	1,690,000	1,578,183

States	*Crop, 1913* *500 lb. bales*	*Estimated crop, 1914* *500 lb. bales*	*Reported ginned, Dec. 13, 1914* *Running bales*
Arkansas	1,072,846	1,040,000	894,277
Florida	58,695	75,000	80,863
Georgia	2,316,601	2,650,000	2,452,790
Louisiana	448,821	460,000	415,533
Mississippi	1,310,743	1,275,000	1,085,002
North Carolina	792,545	950,000	766,673
Oklahoma	840,387	1,250,000	1,068,898
South Carolina	1,377,814	1,500,000	1,328,895
Tennessee	379,471	365,000	319,848
Texas	3,944,970	4,560,000	3,875,144
All other States	123,108	151,000	116,583

Of the States listed as "all others," Missouri produced in 1913, 67,105 and Virginia 23,490 bales. For 1914 these States were estimated to produce 75,000 and 24,000 bales respectively. California, which includes the crop of Lower California, was estimated to produce 37,000 bales, and Arizona, New Mexico, Kansas, and Kentucky were expected to add 15,000 bales as their contribution to the crop. In spite of the huge crop of cotton, its value was estimated on Dec. 10, 1914, at only $519,612,000, a very marked falling off from the record crop of 1913. The reduction in the value of the crop was largely due to the war in Europe lessening the demand for cotton. To obviate this condition, which is world wide, various measures have been undertaken by governments, financial agencies, etc. In the United States a fund of $135,000,000 was contributed by banks of the country to help carry the crop until conditions again become normal. A bill for permissive bonded warehousing has passed both houses of Congress and is now (January 1) in conference committee. The Cotton Futures Act, by which standards, forms of contracts, deliveries, etc., are established, was passed by Congress and became a law Aug. 18, 1914.

The cotton crop of the United States for 1913, as finally reported by the Bureau of the Census, was 14,156,486 gross bales of 500 pounds each. In addition there were obtained 638,881 bales of linters and 6,305,000 tons of seed, of which 4,767,802 tons were crushed for oil. The aggregate value of the entire cotton crop for 1913 was $1,043,760,000. The production of Sea Island cotton does not appear to keep pace with that of upland cotton; indeed it seems the crop for 1914 may not equal that of 1913. This is doubtless due to the increased production of long staple upland cottons of excellent quality. The West Indian production of cotton, most of which is of Sea Island type, does not appear to be increasing, and the situation in the autumn of 1914 was said to be extremely critical. An attempt was made in 1914 to restore the growing of Sea Island cotton in the Bahamas, but the effort was not highly successful. The experiment of growing Egyptian types of cotton in Arizona has been so successful that in 1914 about 9000 acres were planted to that crop. Two or three locally produced strains of Egyptian cotton have been developed that are said to be very promising in yield and in character of lint. In California, especially in the Imperial Valley, the growing of cotton is being rapidly extended, Durango, a long staple upland variety, being the kind most planted.

The world's production of commercial cotton in 1913, according to Bureau of the Census Bulletin 125, was 22,225,000 bales, an increase of about 1,250,000 bales over that of 1912. The contributions of the leading countries to the mill supply for 1912 and 1913 are given in the following table:

Country	*1913* *500 lb. bales*	*1912* *500 lb. bales*
Total	22,225,000	20,976,000
United States	13,545,000	13,118,000
India	3,801,000	3,328,000
Egypt	1,470,000	1,492,000
China	1,200,000	1,074,000
Russia	1,004,000	917,000
Brazil	420,000	315,000
Mexico	150,000	140,000
Peru	110,000	110,000
Persia	140,000	137,000
Turkey	130,000	115,000
All other countries	285,000	285,000

The world's consumption of cotton for the year ended Aug. 31, 1914, was 21,223,000 bales, of which the United States supplied 60.9; India, 17.1, and Egypt, 6.6 per cent. It is estimated there were 146,397,000 active spindles in 1914 working up this cotton crop, 32,107,000 of which were in the United States. These were divided as follows: Cotton-growing States 12,711,000, and other States 19,472,000. The cotton exports from the United States for the year ending Aug. 31, 1914, were 8,654,958 bales, and the imports were 280,290 bales, of which Egypt contributed 137,355; China, 21,926; Peru, 12,629; India, 8186; and Mexico, 99,318 bales. Re-exports amounting to 14,644 bales were made, leaving the net imports 265,646 bales.

The cotton crop of the United States for 1914 was the largest ever produced. From a planted area of 36,960,000 acres, about 1.3 per cent less than that of 1913, the United States Department of Agriculture on Dec. 10, 1914, estimated the production of 15,966,000 bales of 500 pounds each. With the linters estimated on the usual basis, the total crop, it was believed, would be 16,616,000 bales. The United States Bureau of the Census reported on Jan. 9, 1915, 14,447,623 running bales as ginned to January 1. This report included 44,816 round bales, each of which is counted as half a bale, and 76,886 bales of Sea Island cotton. The Sea Island cotton was produced as follows: Florida, 32,326; Georgia, 40,007; and South Carolina, 4553 bales. On Nov. 21, 1914, the International Institute of Agriculture at Rome estimated the cotton crops of the United States at 15,340,000, and of India at 4,178,000 bales. No estimates were available regarding the Egyptian crop, but it was reported as slightly below normal.

The crop of the United States for 1913, the estimated crop for 1914, and the amount reported ginned to Jan. 1, 1915, exclusive of linters, by States were:

States	*Crop, 1913* *500 lb. bales*	*Estimated crop, 1914* *500 lb. bales*	*Reported ginned Jan. 1, 1915* *Running bales*
United States	14,156,486	15,966,000	14,447,623
Alabama	1,495,485	1,690,000	1,639,198
Arkansas	1,072,846	1,040,000	914,115
Florida	58,695	75,000	85,726
Georgia	2,316,601	2,650,000	2,547,747
Louisiana	443,821	460,000	427,509
Mississippi	1,310,743	1,275,000	1,115,817
North Carolina	792,545	950,000	815,116
Oklahoma	840,387	1,250,000	1,096,196
South Carolina	1,377,814	1,500,000	1,390,325
Tennessee	379,471	365,000	330,811
Texas	3,944,970	4,560,000	3,959,299
All other States	123,108	151,000	125,754

The production of India was estimated at about 460,000 bales greater than in 1913. In Egypt the area planted was nearly two per cent greater, but on account of insect ravages no increase in the total crop was anticipated. Experiments in Egypt have shown that a considerable area in the Delta can be reclaimed for cotton culture, but Schanz claims the crop can not exceed 2,300,000 bales with the present water supply, even with an average production of 430 pounds of lint per acre. An attempt has been begun to secure the growing of better and more uniform cotton by the selling at low prices of cotton seed of known purity. The exports from Egypt for the year ending Aug. 31, 1914, were 970,263 bales of 750 pounds each. Through the International Federation of Master Cotton Spinners and Manufacturers, an attempt is being made to improve cotton culture in India. A model plantation is to be established and selected seed will be sold to planters. The report of the British Cotton Growing Association shows the production in new British fields in 1913 as follows: West Africa, 16,300 bales of 400 pounds each; East Africa, 34,500; Sudan, 20,000; West Indies, 7000; and all others 1000 bales, or a total of 78,800 bales. The quality of the West Indian cotton is said to be highly satisfactory. In Lagos a considerably larger crop was produced than in 1912. The results in the Gold Coast Colony are said to be disappointing. In Nigeria local demands have reduced the amount of cotton for export. The Uganda cotton is said to grade with the better qualities of Texas cotton. The results in Nyasaland have been distinctly disappointing both in production and quality. The association has withdrawn from Rhodesia, and unsatisfactory results are generally reported for the Union of South Africa. About 9600 bales of 500 pounds each were exported from German East Africa during 1913, and American upland varieties are said to be giving better results than Egyptian or local cottons. In Russia the area planted to cotton in 1914 was 1,979,000 acres, an increase of about five per cent over that of 1913, when 1,004,000 bales were produced. An attempt is being made through the Banco Agricola to foster the growing of cotton in Paraguay. An unexpected pest of cotton was reported in St. Kitts, where the Australian cockroach (*Periplaneta australasiæ*) destroyed several plantings.

The United States Department of Agriculture and the various experiment stations in the cotton growing States are continuing their work in improving cotton culture by breeding, better use of fertilizers, methods of culture, etc. Much of the effort is being directed to securing earlier production and thus circumventing the cotton boll weevil. This pest, according to the survey of the Bureau of Entomology, made a very small advance in its northern and eastern spread in 1914. It has apparently just reached the State line between Mississippi and Tennessee on the north and the extreme southwestern border of Georgia on the east. All of Alabama seems to be infested west of a diagonal line from the northwestern to the southeastern corners of the State. In Texas and Oklahoma the advance for 1914 was very small. The Department's work with cotton in Arizona and California has been already referred to. Experiments in progress indicate the possibility of developing a cotton industry in the southwest beyond the supposed limits of the boll weevil. Later thinning and single stalk culture as aids to combating the boll weevil are giving promising results. Congress directed the Secretary of Agriculture to make tests as to waste, tensile strength, and bleaching qualities of the various grades of cotton established by the government, and comparisons of western and Atlantic States upland cotton show but one or two per cent variation in waste in all the samples tested. Spinning tests have been made of a number of long staple upland cottons which show that careful breeders in the Carolinas have produced cotton almost equal in every respect to the long staple upland cotton of the Delta region of Mississippi. The Department is also investigating the relation between cotton buying and cotton growing, and it has already been shown that greater discrimination in buying will encourage the production of better grades, greater purity, and more uniformity of staple. An estimate of the Bureau of Crop Estimates, based on the crops of 1909 and 1910, shows the cost of producing the cotton lint in the United States for those years was 8.3 cents per pound, the value of the by-products not being considered. See BANKS AND BANKING, *Banking Coöperation*.

COUNT COMANDO COLLECTION. See PAINTING AND SCULPTURE.

COURT TENNIS. See RACQUETS.

COWS. See DAIRYING; STOCK RAISING.

CRADOCK, SIR CHRISTOPHER, R. N. See NAVAL PROGRESS; and WAR OF THE NATIONS.

CREDIT, AGRICULTURAL. See AGRICULTURAL CREDIT.

CREDIT BANKS. See AGRICULTURAL CREDIT.

CRETE (CANDIA). A Mediterranean island south of Greece, constituting from 1898 until May 31, 1913, an autonomous state subject to the suzerainty of Turkey. The island has an area of 3327 square miles and a population, in 1911, of 344,001. The population in 1900, exclusive of 6113 foreigners, was 310,185, of whom 269,848 were Christian and 33,496 Mohammedan. In 20 years the Greek element has increased by over 62,000, and the Mohammedan decreased by nearly 40,000. The capital is Canea, with 25,185 inhabitants.

The chief industry is agriculture, and the leading product olive oil, which in part is used in the manufacture of soap. The average annual oil production is about 23,000 tons; soap about 3,155,000 kilos, valued at about 17,600,000 drachmas.

The annexation of Crete to Greece was declared on the eve of the Balkan War by the Greek premier Venezelos in 1912; in virtue of article four of the treaty of London, May 31, 1913, Turkey ceded Crete to the allied Balkan states. The union of the island with Greece was formally recognized by the other states by the treaty of Bucharest Aug. 10, 1913, and subsequently by the great powers. The governor-general in 1914 was Loukas Roufos Kanakaris, appointed Oct. 12, 1913.

CRICKET. The international match between the United States and Canada, scheduled for 1914, was postponed because of the European war. Two teams of American cricketers, however, made tours in England. Haverford College engaged in 16 games with the English players, winning four, losing 10 and drawing two. The teams defeated by Haverford were Eton, Forest Hill, Uppingham and Rossall. The Merion Club of Philadelphia played nine games in England, winning four, losing two, and drawing three. The teams that bowed to the Philadelphians were Reigate Priory, Blackheath, Eastbourne, and Mitcham.

The American intercollegiate championship was won by the University of Pennsylvania. Oxford defeated Cambridge at Lords by 194 runs. Eton was victorious over Harrow by four wickets.

CRIDLER, THOMAS WILBUR. An American public official, died Feb. 23, 1914. He was born at Harper's Ferry, Va., in 1850. After studying law he was admitted to the bar, and in 1875 entered the United States Department of State as a clerk. In 1897 he was appointed by President McKinley third assistant Secretary of State, and held this office until Theodore Roosevelt became President. In 1900 he was special commissioner to the Paris Exposition. He traveled in the interests of the Department of State for several years preceding 1904.

CRIME. See PENOLOGY.

CRIMINOLOGY. See PENOLOGY.

CRITICISM. See FRENCH LITERATURE; GERMAN LITERATURE; and LITERATURE, ENGLISH AND AMERICAN.

CROATIA. See AUSTRIA-HUNGARY.

CROCKER LAND (D. B. MAC MILLAN) EXPEDITION. See POLAR RESEARCH, *Arctic*.

CROCKETT, SAMUEL RUTHERFORD. A Scottish novelist, died April 20, 1914. He was born at Little Duchrae, Galloway, in 1860, and was educated at the Universities of Edinburgh and Heidelberg. At 19 years of age he attempted journalism in London. This was not successful, and he entered the Free Church of Scotland. In 1887 he was appointed minister of the Free Church at Penicuik. The publication of *The Stickit Minister* in 1893 at once brought him reputation as a writer in the Scotch tongue. This was followed in rapid succession by over 50 volumes, the best-known of which are: *The Raiders* (1894); *Joan of the Sword Hand* (1900); *The Dark o' the Moon* (1902); *Red Cap Tales* (1904); *Me and Myn* (1907); and *Princess Penniless* (1908). His last book was *The Moss Troopers*, published in 1912.

CROP REPORT. See AGRICULTURE, and under name of crop, as CORN, RYE, etc.

CROSBY, JOHN SCHUYLER. An American soldier and public official, died Aug. 8, 1914. He was born in Albany, N. Y., in 1839, and graduated from New York University in 1855. He served through the Civil War and was several times promoted for bravery. After its close he served as adjutant to Generals Sheridan and Custer in various Indian campaigns. In 1870 he acted as aid to General Sheridan, then Lieutenant-General. From 1876 to 1882 he was American Consul at Florence, Italy, and was governor of Montana Territory from 1882 to 1884. He served as First Assistant Postmaster General under President Cleveland from 1884 to 1886. He was a member of several patriotic societies.

CROSS, RICHARD ASSHETON, first VISCOUNT. An English statesman, died Jan. 8, 1914. He was born at Red Scar, in 1823, and was educated at Rugby and Trinity College, Cambridge, receiving his degree at the latter in 1846. He was called to the bar and for some years went the Northern Circuit. In 1857 he entered Parliament as a Conservative, and retained his seat until 1862, when he retired. Six years later he was returned, after a famous struggle, in which Mr. Gladstone was an opponent, as one of the two Conservative members for South-West Lancashire. In 1874 he became Secretary of State for the Home Department in Disraeli's Cabinet. Through his efforts several important measures were passed in Parliament, the chief of these being the Prisons Bill, which transferred a very important jurisdiction and responsibility from local authorities to the Imperial Government. When Lord Beaconsfield's Government resigned at the beginning of 1880, Mr. Cross was made G.C.B. He had been returned again for South-West Lancashire, and took a leading part on the side of the opposition during the second Gladstone administration. In 1885, when Lord Salisbury came into office, Cross resumed his former position at the Home Office. In 1886 he was appointed Secretary of State for India, and in the same year went to the House of Lords with a title of Viscount Cross. In 1895, when Lord Salisbury for the third time became Prime Minister, Lord Cross was included in the Cabinet as Lord Privy Seal. He continued to hold this office until 1900, when he ceased to be a Cabinet Minister. He was a strong personal friend of Queen Victoria, and was generally understood to be among the most trusted of her advisers in matters of business. His published writings include: *Acts Relating to the Settlement and Removal of the Poor* (1853); *The General and Quarter Sessions of the Peace* (1858).

CROSS COUNTRY RUNNING. The Senior Metropolitan Cross Country Championship Run for the second year in succession was won by Hannes Kolehmainen of the Irish-American A. C., his time being 36 minutes, 47 seconds. T. Barden of the Irish-American A. C. finished second and A. J. Fogel of the Irish-American A. C., third. The team scores were: Irish-American A. C., 40; Bronx Church House, 42; Mohawk A. C., 62; Columbia University, 121; Long Island A. C., 135; Yonkers Y. M. C. A., 155; Holy Family Lyceum, 164.

In the American intercollegiate cross country run held at New Haven, Cornell for the second year in succession was the victor. D. F. Potter, Jr., of Cornell, was the individual winner in 34 minutes 3/5 seconds. D. S. Morrison of Princeton finished second in 34 minutes 6 seconds, and L. E. Wenz of Colby third in 34 minutes 9 2/5 seconds. The scores and order, at the finish, of the various colleges entered were: Cornell, 35; Harvard, 77; Yale, 91; Massachusetts Institute of Technology, 113; Pennsylvania, 114; Princeton, 129; Colby, 150; Dartmouth, 171; Brown, 195; Columbia, 214; College of the City of New York, 251.

The results of the principal amateur Marathons in 1914 were: Boston A. A., 25 miles, won by James Duffy of Hamilton, Canada, in 2 hours, 25 minutes 1 1/5 seconds; Missouri A. C., 25 miles, won by Sidney Hatch of the Illinois A. C. in 2 hours, 59 minutes, 43 seconds; modified Marathon, New York, 12½ miles, won by Hannes Kolehmainen of the Irish-American A. C. in 1 hour, 9 minutes, 1/5 seconds; London, won by Djebelia of France in 2 hours, 40 minutes, 50 4/5 seconds; Chicago, 10-mile road race, won by Sidney Hatch of the Illinois A. C.

The 10-mile A. A. A. Championship was won by Hannes Kolehmainen of the Irish-American A. C. in 52 minutes, 47⅗ seconds. Edward Renz of the Mohawk A. C. captured the 7-mile A. A. A. Walk Championship in 54 minutes, 13⅗ seconds.

CRUISERS. See BATTLESHIPS.

CRUSTACEA. See ZOÖLOGY.

CRYSTALS. See CHEMISTRY and PHYSICS.

CUBA. A West Indian island republic. The capital is Havana.

AREA AND POPULATION. The estimated area is 44,164 square miles; another estimate is 45,881 square miles. The republic is divided into six provinces—Pinar del Río, La Habana, Matanzas, Santa Clara, Camagüey, and Oriente. The population, as returned by the census of Sept. 30, 1907, was 2,048,980; as estimated in 1913, 2,469,579. Population according to race in 1907: native whites, 1,224,539; foreign whites, 203,637; colored, 620,804 (of whom, 274,272 negroes, 334,695 mulattoes, and 11,837 Chinese). Marriages in 1911, 12,846; births, 74,286; deaths, 33,194. Immigration in 1911, 38,953; in 1912, 38,296, of whom 30,660 Spaniards, 2884 North Americans, 1269 Jamaicans. Emigration in 1911, 79,482; in 1912, 62,318; travelers arrived in 1911, 80,923; in 1912, 79,482; travelers departed in 1911, 80,921; in 1912, 62,318. The larger cities, with population according to the census of 1907: Havana, 297,159; Santiago de Cuba, 45,470; Matanzas, 36,009; Cienfuegos, 26,616; Cárdenas, 24,280; Sancti-Spíritus, and Santa Clara, about 17,000 each; Manzanillo, 16,000; Guantánamo, 15,000.

PRODUCTION AND COMMERCE. The staple crops are sugar and tobacco. Corn and sweet potatoes are important products. Large quantities of fruits are raised, notably, bananas, pineapples, oranges, and coconuts. The sugar crop for 1914 was estimated at 17,357,200 sacks, or 2,479,600 tons. Stock raising is an important industry. There are large mineral resources, especially in Oriente, including iron, copper, manganese, lead, zinc, gold, and salt.

Imports and exports in 1913 were valued at $143,758,736 and $164,823,059 respectively, as compared with $125,902,241, and $172,978,438 in 1912, and $113,266,997, and $123,136,379 in 1911. The leading imports include breadstuffs, meats, cotton goods, iron and steel, and machinery. Chief exports in 1911 and 1912 respectively: sugar, $85,169,000, and $102,034,000; tobacco, $29,988,000, and $30,457,000; iron ore, $3,874,000, and $3,910,000; woods, $2,110,000, and $2,264,000; fruits, $1,836,000, and $1,810,000. Trade by countries, thousands of dollars:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United States ..	65,416	75,817	145,186	131,270
Other America..	10,251	10,624	5,280	5,580
U. Kingdom ...	15,398	16,072	11,466	13,427
Spain	9,775	10,030	659	657
Germany	8,431	9,874	6,199	4,708
France	7,706	7,828	2,575	1,685
Total, including others	123,202	140,065	....	164,309
Specie & bullion.	2,700	3,695	....	514
Total	125,902	143,759	172,978	164,823

There were entered at the ports in 1913, 1903 vessels, of which 1729 steam. Merchant marine in 1911, 41 steamers, of 32,315 tons, and 121 sail, of 11,964 tons.

COMMUNICATIONS. In 1913 the length of railway in operation was 3806 kilometers (2365 miles). Telegraphs in 1912: 215 offices, with 8151 kilometers of line, and 9952 kilometers of wire. There is a considerable number of radio-telegraph stations. Post offices in 1912, 574. The principal railway systems in Cuba in which British and American capital were largely invested were the following: The United Havana, 680 miles, the Cuban Central, 341 miles, and the Western Havana, 147 miles. These three form a group distinct from the Cuba Railroad which has 602 miles of track. In the year 1913 the United Group showed a decrease in both gross and net receipts, while the Cuba Railroad had an increase in receipts and was able to increase its dividends. The principal traffic on these railways is sugar and tobacco.

FINANCE. For the fiscal year 1912–13, the budget showed estimated revenue of $37,940,000, and estimated expenditure of $33,974,147; for the fiscal year 1914–15, $41,828,580, and $40,262,906. The latter budget showed estimated customs receipts of $29,100,000; consular dues, $670,000; receipts from posts and telegraphs, $1,000,000; direct taxes, $1,113,000; excise, $3,600,000; lottery, $3,200,000; other receipts, $3,145,580. The larger estimated disbursements for the year 1914–15 were: administration (interior), $11,042,249; public instruction, $5,196,421; public works, $5,101,666; public debt, $4,457,963; sanitary service, $4,264,388; department of finance, $3,280,318. Public debt (1910), $62,083,100.

GOVERNMENT. The executive authority is vested in a president, who, with a vice-president, is elected by indirect vote for four years. The legislative body is a congress of two houses, the Senate and the House of Representatives. The Senate consists of 24 members (four from each province), elected indirectly for eight years. The House consists of 83 members, elected by direct vote for four years. The president is assisted by a cabinet of eight members. On May 20, 1913, Gen. José Miguel Gómez was succeeded as president by Gen. Mario García Menocal for the four-year term. Vice-president, Dr. Enrique José Varona.

HISTORY. In January Dr. Pablo Desvernine y Galdos was appointed Secretary of State. As the result of a reunion in the Liberal Party, the Asbertist faction of dissident Liberals withdrew their support from President Menocal and the Conservative administration lost control of Congress. The Conservative Speaker, Señor Lanuza, resigned in order to make way for the Liberal candidate, Ibraham Urquiaga, who was elected to the Speakership on August 31. In order to meet the financial difficulties caused by the war, the president asked Congress in August to authorize an increase of $5,000,000 over the $10,000,000 recently borrowed from J. P. Morgan & Co., and to tax the salaries of government employees, to tax sugar at the rate of 25 cents per 300 pounds, and to float a loan of $3,000,000 on the strength of the new sugar tax.

An Amnesty Bill for the benefit of "veterans of the independence" charged with homicide and other offenses prior to Oct. 1, 1914, was twice passed, and twice held up by the United States government, because the bill would have granted amnesty to Gen. Ernesto Asbert, and Congressman Arias, who were charged with the murder of Gen. Armando Riva, chief of the Havana police. Mr. Bryan, it was understood, held to the opinion that allowing "veterans" to commit murder with impunity was not consistent with Cuba's obligation to "maintain a government adequate to the protection of life and property." On December 9, however, the Cuban Senate voted an Amnesty Bill which included General Asbert but not Congressman Arias, and with the acquiescence of the United States this restricted Amnesty Bill was passed, since the burden of guilt was thought to rest more heavily upon the congressman than upon the former provincial governor. The tribulations of the Havana police were again brought to public attention when on the night of November 4 a body of soldiers killed three policemen and wounded four others. Apparently the bloodshed was the result of a plot, which, happily, had miscarried; for on the following day 65 soldiers were arrested for mutiny, and 30 odd for participation in the attack on the police. The elections which took place on November 1 were so scandalously vitiated by fraud, that an annulment of the result was confidently expected. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

CUBISM. See PAINTING AND SCULPTURE.

CULLOM, SHELBY MOORE. Former United States Senator from Illinois, died Jan. 28, 1914. He was born in Wayne County, Ky., in 1829, and when he was one year old his parents emigrated to the then new State of Illinois. He acquired a moderately complete education in the common schools. As a young man he worked on the farm, taught school, and studied law. When he was 21 years of age he met Abraham Lincoln, who was then a rising lawyer in Springfield. Cullom wished to study law in Lincoln's office, but the latter at the time was too busy riding circuit to take a student. Instead he found the young man a good position where he was able to study law, and encouraged him in other ways. When Cullom was finally admitted to the bar in 1855, Lincoln continued to assist him and he was soon elected city attorney of Springfield. At the expiration of his term he resumed the practice of law. He took a great interest in the politics of the time and was a delegate to the convention which saw the birth of the Republican party. In 1856 he was elected to the State Legislature and served in that body again in 1860–1, 1872, 1873–4. In 1861 and in 1873 he was Speaker of the House. In 1860 he was a delegate to the convention which nominated Abraham Lincoln. From that time until 1912 he was the most distinguished representative from Illinois at subsequent Republican national conventions. He was elected to the Thirty-ninth Congress in 1865 and was reëlected to successive Congresses up to and including the Forty-first in 1871. In 1862 he was appointed with George S. Boutwell and Charles A. Dana to pass upon the accounts of the United States quartermaster and commissary officers. In the Republican National Convention of 1872 he nominated General Grant in a speech containing about 80 words. It is probable that the demonstration that followed has never been surpassed in any subsequent convention. In addition to General Grant, Senator Cullom placed two other Presidents of the United States in nomination at the respective conventions, and was many times under serious consideration as a nominee for the presidency himself. From 1876 to 1883 he was Governor of Illinois, but resigned in the latter year to become United States Senator. He continued to serve in the Senate until March 3, 1913. In his national legislative career Senator Cullom was the author of some important laws. He secured the passage of the first measure to regulate interstate commerce, and was a chairman of a committee of five senators which investigated the question of interstate commerce throughout the country. For many years he served as chairman of the Committee on Foreign Relations. Senator Cullom was a candidate for reëlection in 1912 in spite of the fact that he was 83 years of age. He was defeated in the primaries by Lawrence W. Sherman. He was in the public service for nearly 57 years and his career was interwoven with that period of United States history beginning five years before the Civil War and ending on March 3, 1913, when he retired from the Senate. In personal appearance Senator Cullom greatly resembled Lincoln and this was the source of great pride in him throughout his life. During the last months of his life he served as a member of the commission on the Lincoln Memorial. Throughout his entire public career no breath of scandal or suspicion ever touched him and he retired from public life poorer financially than when he entered. Several years before his death he published an interesting volume of reminiscences which contained much valuable information relating to the history of his time.

CUMBERLAND PRESBYTERIAN CHURCH. In 1913, as a result of the litigation between this denomination and the Presbyterian Church in the United States, the former was obliged to surrender its publishing house in Nashville. It saved for itself, however, its books, plates, and periodicals. Shortly after this action the members of the denomination subscribed $12,500 to purchase machinery for a new publishing plant. A sufficient amount of this subscription was promptly paid in to purchase a plant of such efficiency as to enable the church to publish its weekly paper, the *Cumberland Presbyterian*, issued from Nashville, Tenn.; also its Sunday School literature of which it issued more than 200,000 pieces annually. The church during the year carried on a campaign to place its doctrinal and historical books in the homes of the people. Revivals were also carried on during 1914. The total membership of the denomination is estimated by its authorities at 120,000.

CURAÇAO. A Netherlands West Indian colony, composed of the islands of Curaçao (212 square miles), Bonaire (Buen Ayre), Aruba, St. Martin, St. Eustatius, and Saba; total area, 436 square miles, with a total population Dec. 31, 1910, of 54,469; Dec. 31, 1912, 55,153. Export of phosphate in 1911, 3028 cubic meters from Curaçao, and 27,658 cubic meters from Aruba. Export of raw gold, from Aruba, 70,697 kilos, valued at 113,115 florins. Total imports 1912, 3,890,123 florins; exports, 2,425,541 (3,430,626, and 1,952,330 in 1911). Vessels entered in the 1912 trade, 1428, of 2,713,000 cubic meters' capacity at Curaçao and 1745, of 184,000 cubic meters' capacity at other ports. Estimated revenue 1914, 711,000 florins; expenditure, 1,070,000 (678,000, and 1,252,000 in 1913; 719,000, and 1,126,000 in 1912). Subvention 1914, 365,000 florins. The governor was Dr. Th. J. A. Nuyens.

CURRELL, WILLIAM SPENSER. An American educator, elected in 1914 president of the University of South Carolina. He was born in Charleston, S. C., in 1858, and graduated in 1878 from Washington and Lee University, where he took post-graduate studies and received the degree of Ph.D. From 1882 to 1886 he was professor of English at Hampden-Sidney College, Va., and held the same chair at Davidson College, N. C., from 1886 to 1895. He was professor of English and Modern Languages at Washington and Lee University from 1895 to 1899, and was professor of English from the latter year until his election as president of the University of South Carolina. Dr. Currell was for many years a lecturer of English at Chautauqua Assemblies, etc.

CURRENCY. See MONEY; BANKS AND BANKING; FINANCIAL REVIEW.

CYCLING. Frank L. Kramer in 1914 won the professional cycling championship for the 13th consecutive year although he had to face some of the best European talent. Harry Kaiser gained fame by winning the amateur title after a bitter struggle with William Hanley of California and others. No sooner had Kaiser's ambition been realized than he jumped into the professional ranks and took part in the six-day race at Madison Square Garden, New York, where he finished, paired with George Cameron, in sixth place.

The Australian cyclists, as in 1913, proved the most successful rivals of the Americans. Alfred Goullet was the most proficient of the foreigners, for in addition to finishing second to Kramer for the professional sprinting championship, teamed up with Alfred Grenda of Tasmania, he won the annual six-day race held in Madison Square Garden, New York. The pair covered a distance of 2758 miles, 1 lap, breaking all previous records.

Six teams were tied for first place when the race was completed and carrying out a new rule the last hour of riding was devoted to a series of sprints, points being awarded on the Berlin system. The Australians amassed a total of 67 points. Peter Drobach and Ivor Lawson were second in the race, Reggie McNamara and Jimmy Moran third, and Oscar Egg and Francesco Verri fourth.

Walter Rutt, the German champion, who won several six-day races at the Garden in former years, joined his country's colors when the European War started.

The world's championships which were to have been held in Copenhagen, Denmark, were declared off because of the war.

CYMARIN. A neutral, nonglucosidal substance obtained from *Apocynum cannabinum* L. and *Apocynum androsemifolium* L. Cymarin occurs as colorless, thick, prismatic crystals, having a bitter taste. It is slightly soluble in cold water, more soluble in hot water. It dissolves easily in acetone, alcohol, chloroform, but is sparingly soluble in benzene, ether, and carbon disulphide. Experiments on animals show that cymarin is about equal in activity to strophanthin, which it resembles closely in its pharmacologic characteristics. It is more active when given intravenously or injected into the muscles than when taken by mouth. Poisonous doses cause emesis through the action on the vomiting centre in the medulla. Cymarin is a cardiac stimulant acting like digitalis.

CYPRUS. A Levantine island, formerly a nominal part of the Ottoman Empire, but occupied by Great Britain under the convention of June 4, 1878, and annexed in 1914. Capital, Nicosia. From 1489 until 1571 Cyprus belonged to the republic of Venice, being conquered in the latter year by the Turks, who continued in possession of it until for administrative purposes it was ceded to England in 1878. It is, after Sicily and Sardinia, the largest island in the Mediterranean, with an area of 3584 square miles. Total population, census of 1911, 274,108. About 25.9 per cent of the population are Mohammedans, the bulk of the population belonging to the native Cypriote Church. The Cypriote Church, though in communion with the Orthodox Greek Church, has been autocephalous since the fifth century.

The island is divided into six administrative provinces, as follows: Nicosia, with 81,497 inhabitants; Famagusta, 58,530; Larnaca, 29,737; Limassol, 46,084; Paphos, 38,508; Kyrenia, 19,752. The principal towns are Nicosia, the capital, with 16,052 inhabitants; Larnaca, with 9262; Limassol, 10,302; Famagusta, an almost ruined town now being rebuilt, with 1233 inhabitants; Varosia, 3599; Ktima, 3091; Kyrenia, 1726.

The ancient copper mines for which Cyprus was renowned have long been abandoned, and the chief occupation of the people has come to be the cultivation of the soil, but agriculture has been greatly retarded by reason of the lack of water. Irrigation works were completed in 1901, and a plan for storing water has been carried out under the direction of the department of public works. Cereals, carobs, cotton, linseed, aniseed, and vegetables are grown; live stock is raised for export. Wine and spirits find a good market in Egypt and Turkey. Much damage has been done by locusts, forest fires, and the large number of goats in the island. Gypsum and asbestos are mined.

There are Mohammedan and Greek-Christian schools. During the school year 1912–13 there were 390 Greek-Orthodox elementary schools, with 26,137 pupils, receiving aid amounting to £4770; and 155 Mohammedan elementary schools, with 5212 pupils, receiving aid amounting to £1340. There are other endowed and private schools, and several secondary schools.

Since the British occupation, suitable provision has been made for lepers in the asylum near Nicosia. The total number of lepers in the island (census of 1911) was 101, of whom 65 were males.

The value of all imports in 1912 was £602,345, against £547,772 in 1911; exports, £728,988, against £626,557 in 1911. These values are exclusive of specie. Among the principal exports were carobs, £251,750; live stock, £79,082; barley, £60,882; wine, £45,355; raw cotton, £40,085; raisins, £31,940; other fruits, £21,079; silk cocoons, £20,026; hides and skins, £11,771; wool, £11,362; wheat, £18,528. Tonnage entered and cleared during 1912–13, 644,363, of which 117,813 tons British; during 1911–12, 758,502, of which 113,873 tons British.

Revenue and expenditure 1912–13, £334,685, and £258,661 respectively; 1911–12, £319,572, and £235,256. Grant-in-aid, £50,000 annually. There are no navigable waterways. A narrow-gauge railway connecting Famagusta with Nicosia (36 miles), opened in 1905, was subsequently extended to Morphou, a total distance of 60 miles. A cable connects with Alexandria, and there are 240 miles of telegraph wire. The government is administered, under the Colonial Office, by a high commissioner (Major Sir Hamilton John Goold-Adams), assisted by executive and legislative councils.

HISTORY. The participation of Turkey in the great War of the Nations in 1914, and the resulting declaration of war issued against Turkey by Great Britain (November 5), furnished the British government with an occasion for the definite annexation of the island. Since the year 1878 Cyprus had been nominally still a part of the Ottoman Empire, actually occupied and administered by the British. In November, 1914, however, an Order in Council was issued annexing the island to His Majesty's Dominions, "in order that proper provision may be made for the government and protection of the said island." The annexation of Cyprus to the British Empire was a bitter disappointment to the numerous Greek-speaking inhabitants, many of whom had persistently demanded the union of Cyprus with Greece. By affiliation of language and national sentiment, certainly the Cypriotes were more closely bound to Greece than to Great Britain. Even in May, 1914, a petition to the King (of Great Britain and Ireland) was drawn up by the Cypriotes, affirming that while they were grateful for the benefits already conferred upon their island by Great Britain, they would be still more grateful if Great Britain would hand Cyprus over to Greece, and thus gratify the "natural, eternal longing of a part of the Greek race which is, upon the whole, grateful to Great Britain,—the yearning to be united to the consanguineous Greek Kingdom." "Give back, great King," they pleaded, "this happiness to the Cypriote people, who were provisionally placed under your liberal and glorious sway, that they may bless the name of your exalted grandmother from generation to generation. God Save the King!" The grievance of the Cypriote Greeks was an injury to their nationalist sentiment rather than actual misgovernment. Indeed the British could point with something like pride to the reformed law courts, the more equitable system of taxation, the 800 miles of metalled roads, the sanitary provisions, the quays, the harbor improvements, the fine public buildings, and the quasi-representative Legislative Council (in which nine Greek Christian and three Mohammedan elective members sat with six official or appointive members). These considerations, while they served somewhat to mollify the Cypriotes, could not be alleged as Great Britain's reason for the annexation. The central fact in the case was this: that the British government desired Cyprus as a naval post of great strategic value in the eastern Mediterranean, and was willing therefore to annex the island in direct defiance of the hope which the Cypriote Greeks fondly cherished of uniting their island to Greece.

CYRENAICA. See TRIPOLI.

DAHOMEY. One of the colonies composing the French West Africa government-general. The capital is Porto Novo, with about 40,000 inhabitants; Abomey has 10,732; Ouidah (Whydah), 13,000; Cotonou, 1954. The chief products for export are palm kernels, palm oil, corn, live animals, copra, and cotton. The total imports for 1912 were valued at 20,310,098 francs—cotton 5,423,947, beverages 2,482,817, tobacco 1,038,128, petroleum 781,395, wooden wares 833,027, metals 640,619, etc. The total exports were valued at 21,451,317 francs—palm kernels 13,398,416 fr., palm oil 6,361,320, dried fish, 304,670, live animals 155,713, corn 325,036, copra 105,263, kola nuts 48,420, etc. A railway is in operation from Cotonou as far as Savé, a distance of 261 kilometers. This line will eventually reach the Niger at a point near Karimana. It will have an ultimate length of 748 kilometers. There is a branch line from Cotonou to Segboroué, by way of Ouidah. A light railway connecting Porto Novo with Sakete traverses a region rich in palms and well cultivated. A branch is under construction to Pobé. See FRENCH WEST AFRICA.

DAIRY FARMING. See DAIRYING.

DAIRYING. SUPPLY OF DAIRY PRODUCTS. The value of dairy products in the United States was somewhat higher in 1914 than in 1913, due in part to a slight increase in production and in part to higher price levels. The increase in milk production was not a noticeable one, as for several years it has not been keeping pace with the consumption of milk and its products. The number of dairy cows is increasing at about the rate of 15 per cent, while the population is increasing 21 per cent. It is true that the increased production per cow makes up in part for this deficiency, but on the other hand, the consumption of milk and its products per capita tends to increase so that each year sees an increase in the imports of dairy products. The consumption of dried milk, condensed milk, ice cream, and fermented milk drinks is on the increase and new uses for casein and other milk products in the arts are constantly being found. Dairying seems to be declining in some sections of New York and New England, but in the Northwest and in the South more interest is taken in it than ever before.

Throughout the country farmers have been paid the same or somewhat higher prices for milk than in 1913, and with the exception of butter the price level of milk products has been higher than ever before. The cost of producing milk has been constantly advancing for a number of years, and each year the producer and dealer are forced to adopt more sanitary methods to meet the demands of the inspector of market milk. In all dairy sections more silos have been built than ever before. The cow-testing-association movement has also been spreading rapidly.

The dairy industry suffered to some extent from the outbreak of the foot-and-mouth disease. (See VETERINARY MEDICINE.) For a time it prevented many dairymen who produced market milk from buying cows and thus decreased temporarily their supply to regular customers. The quarantine of the cattle exhibited at the National Dairy Show at Chicago caused no little annoyance and pecuniary loss. A much greater loss than this is sustained every year by dairymen from tuberculosis in their herds. A significant movement to prevent this was the quarantine of five counties in northeastern Illinois on October 1. Under the terms specified by the Federal and State authorities, no cattle can be shipped from those counties for dairy or breeding purposes unless accompanied with an official certificate showing that they have successfully passed the tuberculin test. This action was caused by the practice of some owners and dealers who had been in the habit of issuing health certificates for cattle that were obviously diseased. This being known to buyers in general, it created a suspicion of all Illinois cattle.

There was an attempt to enforce a city ordinance in Milwaukee, Wis., requiring that all milk come from tuberculin-tested herds. This resulted in a strike of milk producers and new supplies had to be obtained for a time, thus throwing the entire milk trade of the city into confusion.

In some respects, it has been an interesting year for the dairy interests, as many big records of milk yields have been made by the Holstein, Guernsey, Jersey, Ayrshire, Brown Swiss, and Red Polled breeds. Tilly Alcartra, a five-year-old Holstein cow in California, made a new world's record of milk. On November 13 she completed a yearly record of 30,342.6 pounds of milk, containing 951.3 pounds of fat, equivalent to 1189.12 pounds of butter. The seven-year-old Guernsey cow, May Rilma, also exceeded all previous records of butterfat; her yield of milk was 19,639,58 pounds, which contained 1059.59 pounds of fat. Soon after making this record May Rilma was sold at a public auction for $5010, a price higher than had ever before been paid for a Guernsey. King Segis Pontiac Chicago, a bull calf, was sold to a syndicate for $20,000, a record price for a Holstein.

MARKET MILK. One of the greatest wastes in the dairy industry is the distribution of market milk. Representatives of the Federal Department of Agriculture found that in the city of Washington the average distances covered each day by 100 milk wagons was 19.1 miles. If all the milk wagons of the city traveled that distance, every mile of the city would be covered 6½ times a day.

Another tremendous waste is that of lost and broken milk bottles. According to figures which 40 dealers furnished to the Department of Agriculture, a milk bottle lasts on the average about 22 trips. If these estimates are representative of conditions throughout the trade, dealers must obtain a new supply of bottles every three weeks, and if they cost 3½ cents each, a milk dealer who delivers 10,000 bottles a day must spend $15.55 daily or $5575.75 a year to replace broken and lost bottles. To avoid this excessive breakage, there is an increase in the use of single-service milk bottles made of paper.

New types of steel refrigerator cars were built during the year by several railroad companies for use in long hauls of milk and cream to supply the city trade.

Each year the pasteurizing of market milk has grown in favor, especially when milk is obtained from herds not tuberculin tested, or when the milk comes from doubtful sources. One objection urged against pasteurizing was its cost, but a study of a number of pasteurizing plants by the U. S. Department of Agriculture shows that it costs only about .313 cents for a gallon of milk and .634 cents for a gallon of cream. Laboratory tests by the Department have shown that the process of bottling pasteurized milk while it is still hot, and then cooling with a forced draft of air, has so many advantages that the method will prove to be economical and efficacious on a commercial scale. It prevents reinfection during the process of bottling and is much cheaper than pasteurizing in bottles. The milk can be bottled at 145° F., using bottles which have been steamed for two minutes just previous to filling.

It has also been demonstrated that the flavor of garlic may be removed from milk by blowing air through it at a temperature of 140° to 145° F.

IMPORTS OF DAIRY PRODUCTS. Until within a few years cheese was the only dairy product imported into the United States in any large amount; but the imports of milk and all kinds of milk products have been increasing for some time, especially since the passage of the Underwood Tariff Act of 1913. The effect on domestic prices, however, has been hardly noticeable except in the case of butter. The past year butter has been imported from Canada, Argentina, Australia, New Zealand, Denmark, Sweden, Finland, and Siberia. Much of it has been of inferior quality, and since the outbreak of the European War these imports have practically ceased. Canada is sending considerable milk and cream over the border to be made into butter in the United States. The value of the dairy products imported during the fiscal year ended June 30, 1914, was as follows: Cheese $11,010,693, butter $1,753,461, milk, cream, and condensed milk $2,639,034, as compared with $9,185,184, $304,090, and $1,203,833, respectively, in the previous year. The increase is due in part to the tariff and in part to the fact that production in the United States is not keeping up with consumption. Probably about 25,000,000 pounds of cheese, or over one-third of that imported, was of the Swiss variety, and 8,000,000 pounds were Gorgonzola. The import of nearly all kinds of foreign cheese ceased after Aug. 1, 1914.

DAIRYING IN FOREIGN COUNTRIES. The cheese industry is declining at the present time in Canada, in spite of the government's efforts to encourage it. Cheese makers say they can not pay the prices offered by the creameries for raw milk and cream. In Eastern Canada the growth of cities has also increased the demand for market milk, and the present United States tariff has opened a new market for Canadian milk. In Western Canada dairying is in a flourishing condition. To prevent fraud the government issued new regulations for marking butter and cheese.

Each year marks an advance in the dairy industry of Argentina. In February there was organized at Buenos Aires a national dairy association, having as its object the promotion of the industry throughout the republic.

The dairy industry in Europe and the international trade in dairy products have been seriously interfered with by the European War. An immediate effect was a temporary decrease in the export of finely flavored cheeses from France. The ultimate effects of the war can not be foretold, but undoubtedly it will cause a large decrease in the number of dairy cattle in central Europe.

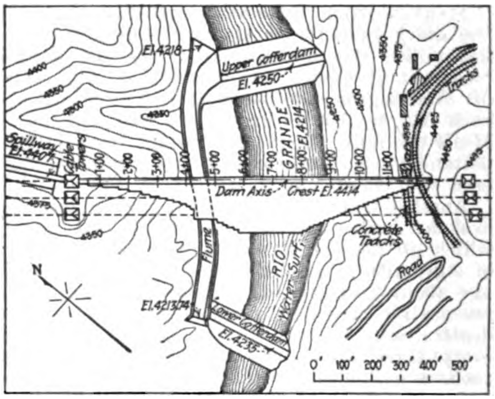
The Sixth International Dairy Congress was held in June at Berne, Switzerland. Besides lectures and discussions on dairy topics, there were special demonstrations covering all phases in the preparation of the milk and the making of Emmental cheese. The significance of lactic-acid bacteria, standards for cheese, and the use of the products were among the subjects for discussion by the delegates, but the milk supply of cities received the largest amount of time, as that seems to offer more serious problems at the present time than any other phase of the dairy industry.

INVESTIGATIONS. It has been found possible to prepare Cheddar cheese for market by packing in one-pound tins at the press. Good cheese of the Swiss type can be produced at any season of the year by the use of pure cultures of Bacillus bulgaricus, or with mixed cultures from old cheese. The peppery taste of Roquefort cheese has been found to be caused by certain volatile acids of the group insoluble or partly soluble in water. It has been found possible to make from cow's milk a Roquefort cheese closely approximating the texture and flavor of Roquefort made from sheep's milk. A method of making American Camembert practically equal in quality to that imported has been worked out. It has been ascertained that unripened cheeses, such as cream and Neufchatel, have so much sugar that they can not be used as food for diabetics, while ripened cheeses of the Cheddar, Swiss, and Limburger types are entirely free from sugar. Although oxalic acid, an active poison, is produced by many molds, it is not produced by the molds prevalent in Limburger and Roquefort cheeses. The growth of a typical Roquefort mold is controlled by the supply of oxygen available in the interior of the curd.

Investigations on casein have demonstrated that the essential difference between buttermilk casein, which could not be used for paper coating, and skimmed milk casein, which answered every purpose, was due to the presence of fat, salts, and other impurities in the former. When these were removed by proper washing, the casein obtained from buttermilk equaled the best made from skimmed milk. A simple method has been devised for the thorough washing of buttermilk curd, formerly a difficult process. It has been found possible to make a condensed skimmed milk suitable for ice cream manufacture by the blowing process. Palmer and Eckles, of the Missouri Experiment Station, have shown that the yellow pigment in milk comes from the feed of the cow, and is not synthesized in the body of the animal, as hitherto supposed.

LITERATURE. The following is a list of some of the important publications of the year: Ayers and Johnson, "Pasteurization in Bottles and the Process of Bottling Hot Pasteurized Milk," in *Journal of Infectious Diseases* (Chicago, March, 1914); J. T. Bowen, "Application of Refrigeration to the Handling of Milk," in *U. S. Department of Agriculture Bulletin 98* (Washington, 1914); J. N. Currie, "Flavor of Roquefort Cheese," in *Journal of Agricultural Research* (*ib.*, April, 1914); W. Ernst, *Textbook of Milk Hygiene*, trans. by Mohler and Eickhorn (Chicago, 1914); Evans, Hastings, and Hart, "Bacteria Concerned in the Production of the Characteristic Flavors in Cheese of the Cheddar Type," in *Journal of Agricultural Research* (Washington, June, 1914); Friedel and Keller, *Deutsche Milchwirtschaft* (Halle, 1914); T. L. Haecker, "Investigations in Milk Production," in *Minnesota Experiment Station Bulletin 140* (St. Paul, 1914); O. F. Hunziker, *Condensed Milk and Milk Powder* (Lafayette, Ind., 1914); Palmer and Eckles, "Carotin, The Principal Natural Yellow Pigment of Milk Fat," in *Missouri Experiment Station Research Bulletins 9–13* (Columbia, Mo., 1914); Rabild, Risser, and Parks, "Homemade Silos," in *U. S. Department of Agriculture Farmers' Bulletin 589* (Washington, 1914); H. D. Richmond, *Dairy Chemistry* (London, 1914); Thom, Currie, and Matheson, "Studies of Roquefort, Camembert, and Neufchatel Cheese," in *Storrs Agricultural Experiment Station Bulletins 78, 79* (Storrs, Conn., 1914); G. S. Thompson, *British and Colonial Dairying* (London, 1914); U. S. Department of Agriculture, "The Production of Clean Milk," in *Farmers' Bulletin 602* (Washington, 1914); T. E. Woodward, et al., "Making and Feeding Silage," in *U. S. Department of Agriculture Farmers' Bulletin 578* (*ib.*, 1914).

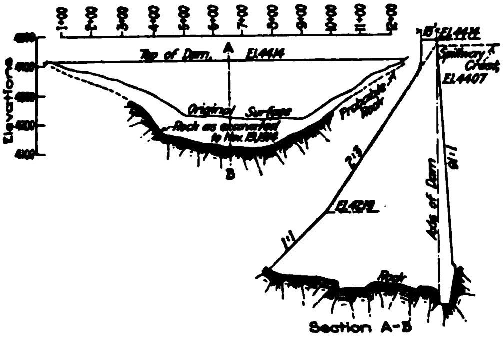
DAMS. The highest earth dam on record was under construction during 1914 by the Spring Valley Water Company to retain the water of a new reservoir for the San Francisco, Cal., water supply. It was to have a maximum height of 240 feet above bed rock, and a sectional thickness at the base of 1312 feet, and at the top of 25 feet, while the crest was to be 1260 feet in length. There is no core wall, but unusual care was to be taken in depositing the various materials entering into the composition of the dam. Naturally this material is deposited by sluicing and hydraulic fill. The dam will add to the Spring Valley Water Company's reservoir a storage capacity of 53,000,000 gallons. It is located in the wide valley of Calaveras Creek in Alameda County, 36 miles southeast of San Francisco. Previous to this construction the highest earth dam on record was the Necaxa Number 2, at Necaxa, Mexico, which had a finished height of 192 feet.



ELEPHANT BUTTE DAM SITE, SHOWING FLUME, DAM, AND CONSTRUCTION LAYOUT.
(From *Engineering News.*)

Another notable dam completed during 1913 and in operation in 1914 was located on the

Bow River in Alberta, and consisted of an earth embankment 7000 feet long, and 35 to 0 feet high, with an Ambursen hollow reënforced dam 750 feet between abutments, and 39 feet high to the crest, with 24 openings each 27 feet, provided with Stoney gates 11 feet high, and a reenforced concrete headwork at right angles to the dam proper with five 20-foot openings closed by Stoney gates 14 feet high. This dam is located about 100 miles southeast of Calgary, and is part of the irrigation system of the Canadian Pacific Railway. It is known as the Bassano Dam, and is designed to pass 100,000 second feet of water with 14 feet on the crest. The dam was built on a stratum of clay, beneath which was sand containing water under slight pressure. It is especially noteworthy for the unusually great depth of water which must be passed over its crest during seasons of flood, being one of the most notable overfall dams now in existence.



LONGITUDINAL AND CROSS SECTION OF THE ELEPHANT BUTTE DAM.

In 1914 the Elephant Butte Dam, which formed a part of the greatest irrigation enterprise in America, was rapidly nearing completion, so that water could be impounded during the winter and spring of 1914–15. This dam is 1200 feet in length, with a maximum height of 300 feet, and a maximum width at the base of 215 feet, and impounds in its reservoir 2,642,292 acre feet, or 862,000,000,000 gallons. The irrigation project will bring under cultivation 180,000 acres of land, 155,000 of which are in southern New Mexico and Texas. The reservoir formed by this dam will be 45 miles in length, submerging 40,000 acres of land, making an artificial lake which is the largest of its kind in the world. The design of the dam is a cyclopean concrete masonry structure, and the cost of the project was $7,200,000.

On November 2 the Cedar River Dam for water supply for the city of Seattle, Wash., was ready, and two days later the rock tunnel was completed. This dam is 160 feet in height, with a length at the crest of about 1000 feet, and it forms a storage basin with a capacity of 5,200,000,000 cubic feet. The expenditure for the work was $1,470,000. A new dam across the Colorado River at Austin, Texas, was completed during the year, being of the hollow reënforced concrete type, 1235 feet in length, and impounding water at a height of 65 feet above the normal low water level. A portion of the old dam about 560 feet in length was used in the construction after the foundations had been strengthened and made impervious to a depth of 18 feet below water by grouting under pressure. The old dam failed in April, 1900, owing to defective foundations.

The city of Watervliet, N. Y., to protect itself from periodic inundation by water from the rolling land above the city, built two reservoirs with outlet works which will be normally dry, but which will protect the city by impounding temporarily the rainfall causing spring freshets. This project involved the construction of an earth dam across Dry River, the main dam being an earth-fill across the upper end of a rock gorge, where the valley broadens out into an earth basin—this gorge being at the point selected 40 feet wide, but increasing to a width of 500 feet at the greatest elevation, 85 feet above the bottom. The crest of the dam is 20 feet thick, the upstream slope is one on 2½, and the downstream slope one on 2. The berms, 8 feet wide, are built on both slopes at the mid-height, and tile drains carry the drainage to the toes of the slope, while the lower part of both slopes is paved. A reënforced concrete core wall 6 inches thick, with a base 3 feet wide, goes down into the rock. Supplementary to the upper dam and over a mile below is a second dam, constructed of reënforced concrete 25 feet in height, and 105 feet along its crest. This small reservoir receives the discharge from the tower, which is a feature of the upper dam, and takes the place of a regulating works. In case of freshet the water impounded by the dam is discharged through a special conduit to the Hudson River.

One of the dam failures of the year occurred on October 23, when a concrete dam built by the Horseshoe Mining Company across the Trinity River near Trinity, Cal., was carried away by flood waters, the central half of the structure being broken off. This dam was 357 feet in length, with a maximum height of 22 feet, the maximum base width being about 7 feet, and narrowing to 20 inches on the crest. The failure was thought to be due to the application of pressure to the green concrete.

In Austria there was in progress notable construction to control the flood waters of the Elbe River in northern Bohemia. One project known as the Königreich Walde reservoir involved the construction of a dam on the Elbe River just above Königinhoff. This project controls a drainage area of 200 square miles, and furnishes a reservoir extending 4.5 miles upstream from the dam, covering an area of 222 acres to a maximum depth of 98.5 feet, and impounds 320,887,000 cubic feet of water. The dam contains 124,100 cubic yards of broken stone masonry, is 136 feet high, 23.6 feet wide on the top, 124 feet wide on the base, and 735 feet long on the crest, being arched upstream. It is built of unusual strength to protect important towns lying downstream, and during the construction the river was carried around the dam site in two tunnels 19.7 feet in diameter, bored through solid rock. These tunnels will be closed by bulkheads through which will pass 43½-inch pipes so that the water may be used to generate power. A short distance below the town of Spindelmühle, 21.4 miles above the Königreich-Walde reservoir dam, another basin, known as the Krausebauden reservoir, is to be built. It will have a capacity of 119,491,400 cubic feet, of which 88.05 per cent will be kept impounded for flood storage. This dam contains 65,450 cubic yards of broken stone masonry, and is 136 feet high, 16.4 feet wide on top, and 118.2 feet wide on the base. It is arched upstream and has a crest length of 492 feet. These reservoirs are two of the six projects that were built by the River Regulation Commission in Bohemia, and before the outbreak of the war 23 projects were decided on, which would control a total drainage area of 1730 square miles, and would reduce the maximum floods on the main Elbe by about 1.3 feet. The total cost of the 23 projects was estimated at $12,100,000, and the dams that were built or under construction in 1914 involved a cost of $2,503,000. These dams were for the most part of the massive masonry construction, characteristic of such European works.

Another interesting dam construction during the year was the Hindia Dam on the Euphrates River in Asiatic Turkey, 47 miles south of Bagdad. It was designed by Sir William Willcox, who built the Assuan Dam in Egypt, and is a part of the large irrigation scheme prepared by him in 1909 for the Turkish government. This dam was being built on a site consisting of fairly hard silt, which was dense enough to stand up vertically when excavated. Under the dam there was a footing of concrete three feet thick, and 72 feet, 2 inches in width. On this concrete brick work was built 6½ feet in depth, and 65 feet, 7 inches in width, and on this foundation the piers of the dam were built. The plan used was to place the dam east of the original river bed, and then to erect an embankment across the river, so as to change its course. The area covered by the works was enclosed by interlocking sheet piling. At one side of the dam there is a lock, and a head regulator is maintained, so that the ordinary summer level of the river will be raised by about 16 feet, 6 inches, and thus an ample supply of water will be diverted into the Hilla channel, which had been previously silted up. See WATER SUPPLY.

DANBURY HATTERS' CASE. See BOYCOTT.

DANISH LITERATURE. See SCANDINAVIAN LITERATURE.

DANISH WEST INDIES. A colony of Denmark comprising three islands with a total area of 139 square miles and (1911) 27,086 inhabitants (12,508 males, 14,578 females). The population in 1901 was 30,527; in 1841, 40,955. The islands are: Saint Croix, 84 square miles and (1911) 15,467 inhabitants; Saint Thomas, 33 and 10,678; Saint John, 21 and 941. The capital is Charlotte Amalie, on Saint Thomas, with 8247 inhabitants in 1911; Kristianssted, on Saint Croix, had a population of 4592. The inhabitants are chiefly negroes engaged in sugar culture. The sugar export from Saint Croix in 1910–11 amounted to 10,664 metric tons; in 1911–12, 10,023; in 1912–13, 6063. The Governor in 1914 was L. C. Helweg-Larsen.

DARTMOUTH COLLEGE. An institution of higher learning, at Hanover, N. H., founded in 1769. The number of students enrolled in the several departments of the university in the autumn of 1914 was 1392; the summer session of 1914 included 228 students, and the faculty numbered 123. Frank Maloy Anderson, of the University of Minnesota, replaced Sidney Bradshaw Fay as professor of history, the latter going to Smith College. There were several noteworthy benefactions received during the year, among which was the establishment of the Edward Tuck Foundation for Instruction in the Language and Literature of the French People, and $42,000 for Tuck Drive, both given by Edward Tuck; a $5000 scholarship given by B. J. Blakslee; and several tracts of land given by John E. Johnson. The productive funds of the college amount to $3,900,000, and the total income from all sources to $480,000. The library contains 125,000 bound volumes and 25,000 pamphlets. The president is Ernest Fox Nicholls, LL.D.

DAUGHERTY, JEROME. An American Roman Catholic priest and educator, died May 24, 1914. He was born in Baltimore in 1849, and studied under the Jesuits at Loyola College in that city. In 1865 he was admitted to the Society of Jesus, and in 1872 taught mathematics at Georgetown University. He studied theology at Woodstock College, and was ordained to the priesthood in 1880. For the two years following he taught at St. Francis Xavier College in New York City, and for the two years following this was prefect of studies at Boston College. In 1884–5 he taught at Loyola College in Baltimore, and then for four years was vice-president of Gonzaga College in Washington. He was appointed vice-president at Georgetown University, but resigned this post to go to Holy Cross College, and in 1901 he was called to New York, where he became assistant to the provincial of the Society of Jesus. In 1901 he was appointed President of Georgetown University, but was obliged to retire on account of ill health in August, 1905. During his presidency the college buildings were increased by the Ida Ryan Hall and the Ryan gymnasium, a new wing of the university hospital, the Hirst library, and the Kober operating amphitheatre. He also added a fourth year to the law school course of the University, introduced lectures in ethics into the medical school, and established a dental college.

DAVIS, COMMISSIONER KATHARINE B. See FEMINISM.

DAVIS, GEORGE BRECKINRIDGE. An American soldier, died Dec. 16, 1914. He was born in Ware, Mass., in 1847, and graduated from the United States Military Academy in 1871. Before entering the Academy, however, he had served in the Civil War and had risen to the rank of second-lieutenant. He was honorably mustered out of service on June 26, 1865. In 1871 he was appointed second lieutenant in the Fifth Cavalry and was promoted through successive grades until he became major and judge-advocate in 1888. In 1895 he was appointed lieutenant-colonel and deputy-judge advocate-judge. From 1895 to 1901 he was professor of law and history in the United States Military Academy. He was appointed colonel and judge-advocate in 1901, and brigadier-general and judge-advocate-general of the United States army in the same year. He retired with the rank of major-general in 1911. He served as delegate to several peace conferences and he was a well-known authority on international law. Among his writings were: *Elements of International Law* (1887); *Elements of Law* (1897); *Military Law* (1898); *Military Laws of the United States* (1907); *Elements of International Law* (1908).

DAVIS, HENRY WILLIAM BANKS. An English animal painter, died in December, 1914. He was born at Finchley, Aug. 26, 1833, and was educated at Oxford, in the Royal Academy Schools, and at Boulogne-sur-Mer. He became an associate of the Royal Academy in 1873, and also of the Paris Société Nationale des Beaux-Arts in 1892. He served on juries at expositions in Paris (1889 and 1900), and at Chicago (1893), and on other international art juries. At the Royal Academy he exhibited "The Banks of the Upper Wye," and "Flow'ry May" in 1897, and "Apple-Blossom," "Upper Wye," and "British Wild Cattle" in 1903. His reputation depends chiefly upon his skillful treatment of pastoral scenes and especially of cattle and animal subjects. His best paintings include: "A Panic" (Fonthill House); "Summer Afternoon" (Sheffield Gallery); "Returning to the Fold" (1880); "Approaching Night" (1899); and "Contentment" (National Gallery). During his earlier period Davis did much work in sculpture, a "Galloping Bull" (1872) being perhaps the best example.

DAYTON FLOOD PREVENTION. See Flood Prevention.

DEATH RATE. See Marriage and Divorce, *Matrimony and Death Rate;* and Vital Statistics.

DEGAS. See Painting and Sculpture.

DE LA REY, Jacobus Hendrik. A Boer soldier, died Sept. 16, 1914. He was born in 1848. The conditions of Boer life in South Africa at that time resulted in a continual state of warfare against native tribes by the Boers, and De la Rey's experience as a fighter and leader of the fighting men resulted from these conditions. In the Anglo-Boer War in South Africa he was one of the most daring and successful of the Boer leaders in the field. His personal bravery was famous among both Boers and British. Long before the war, however, he had been recognized as one of the trusted leaders of his people. In the politics of the South African Republic he followed the moderate lead of General Joubert. In the more recent history of the Transvaal he took a silent but loyal part as a lieutenant of General Botha. His death resulted from accidental shooting in Cape Town.

DELAWARE. Population. The estimated population of the State on July 1, 1914, was 209,817. The population in 1910 was 202,322.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	197,000	7,092,000	$4,397,000
	1913	197,000	6,206,000	3,662,000
Wheat	1914	114,000	2,337,000	2,547,000
	1913	118,000	1,688,000	1,441,000
Oats	1914	4,000	108,000	54,000
	1913	4,000	122,000	62,000
Rye	1914	1,000	18,000	17,000
	1913	1,000	14,000	11,000
Potatoes	1914	11,000	880,000	616,000
	1913	11,000	957,000	718,000
Hay	1914	72,000	a 79,000	1,848,000
	1913	72,000	94,000	1,476,000

a Tons.

Mineral Production. The only mineral products of the State are derived from its quarries, clays, sand and gravel pits, and sales of potable waters. The total mineral production increased from $425,360 in 1912, to $541,542 in 1913. The chief item of increase was in the output of stone. The principal clay product is common brick, with small quantities of front brick. The total value of the clay products increased from $162,216 in 1912, to $187,280 in 1913.

Transportation. The railway mileage of the State in 1913 was about 335. Practically no construction has been done in recent years.

Education. The total school population of the State is about 50,000, with an enrollment of about 36,000, and an average daily attendance of about 23,000. The teachers employed number about 1000, of whom about 860 are women. Expenditures for schools approximate $650,000 a year.

Charities and Correction. There is no State board which has supervision over charitable and correctional institutions in the State. The Associated Charities of Wilmington has a direct or indirect supervision over many philanthropic institutions. These include: the Home for Friendless Children, the Home for Aged Women, St. Joseph's Home for Orphan Colored Boys, Florence Crittenden Home, Delaware Industrial School for Girls, Home of Merciful Rest, and the Layton Home for Colored Persons. These are all in Wilmington. In addition there are the Home for Aged Women at Dover, the Ferris Industrial School for Boys at Marshalltown, the Delaware Hospital for the Insane at Farnhurst, Newcastle County Hospital at Farnhurst, and the work house and jails in the several counties. The Delaware State Tuberculosis Commission has general charge of the work for the prevention and cure of this disease.

Finance. According to the treasurer's report for the fiscal year 1914, the total receipts from all sources for that period amounted to $685,273 and the disbursements to $716,653. There was a balance on hand at the beginning of the year of $45,797 and at the end of $14,418. The chief sources of revenue are railroad, corporation, and franchise taxes, and the chief expenditures are for State charitable and educational institutions and State officers. The bonded debt of the State in that year was $826,785.

Politics and Government. There was little of political interest in 1914. The Legislature did not meet, as the sessions are biennial, and the last was held in 1913. The November elections were for Representative in Congress and for State Treasurer and State Auditor. The Republicans elected Thomas W. Miller to the House of Representatives by a vote of 22,922, compared with 20,681 for the Democratic candidate, Franklin Brockson, and also elected a State Treasurer and a State Auditor. Kent and Sussex Counties went Democratic, but a largely increased Republican vote in Wilmington resulted in the election of Miller. As a result of the election the Legislature is Republican on joint ballot by 28 to 24 Democrats.

State Officers, 1915. Governor, Charles R. Miller, Rep.; Secretary of State, Thomas W. Miller, Rep.; Lieutenant-Governor, Colen Ferguson, Dem.; Attorney-General, Josiah O. Wolcott, Dem.; Banking and Insurance Commissioner, William R. McCabe, Dem.; State Treasurer, William J. Swain, Rep.; State Auditor of Accounts, Charles J. Luff, Rep.

Supreme Court: Chancellor, Charles M. Curtis, Rep.; Chief Justice, James Pennewill, Rep.; Associate Justices, Thomas B. Heisel, Dem.; Herbert L. Rice, Rep.; William H. Boyce, Dem.; Clerk, Wilbur D. Wilds, Dem.

State Legislature, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	9	19	28
Democrats	8	16	24
Republican majority	1	8	4

The representatives in Congress will be found in the section *Congress*, article United States.

DELAWARE & HUDSON R. R. STRIKE. See Railways.

DE LEON, Daniel. An American socialist labor leader, died May 11, 1914. He was born in Curaçao, West Indies, in 1853. He studied at several European universities and in 1872 removed to the United States. From 1886 to 1891 he was lecturer on Latin-American diplomacy at Columbia. In 1888 he joined the Knights of Labor, and in 1895 as a result of a division in that organization, he formed the Socialist Trade and Labor Alliance of which he was an officer until its consolidation with the Industrial Workers of the World. He was active in the Nationalist Movement and also supported Henry George for mayor of New York City in 1886. In 1890 he joined the Socialist Labor party, becoming editor of its English organ. From 1892 he was editor of the *Weekly People* and from 1900 edited the *Daily People*, both Socialist papers published in New York.

DE LEON, Thomas Cooper. An American author and editor, died March 19, 1914. He was born in Columbia, S. C., in 1839, and was educated at private schools and at Georgetown University. From 1858 to 1861 he was auditor of the Topographical Engineering Bureau at Washington. In the latter year he removed to the South and enlisted in the Confederate Army. He served throughout the war and at its close became editor of the *Cosmopolite Magazine* in Maryland. In 1866–67 he was engaged in newspaper and magazine work in New York City, and from 1868 to 1876 was managing editor and sole editor of the *Mobile Register*. Following this he edited several other papers in the South. He originated and conducted several carnivals in southern cities, including Mobile, Pensacola, Vicksburg, and Baltimore. From 1897 until his death he was engaged in magazine writing and the writing of novels. From 1903 he was totally blind. He was the author of: *Cross Purposes* (1869); *Creole and Puritan* (a novel, 1889); *A Fair Blockade Breaker* (1891); *Four Years in Rebel Capitals* (1893); *Crag Nest* (1898–1910); *Confederate Memories* (1899); *Belles, Beaux and Brains of the 60's* (1907). He also wrote many poems and short stories.

DENISON, Henry Willard. An American lawyer and diplomat, died July 3, 1914. He was born in Guildhall, Vt., in 1846, and received an academic education at Lancaster, N. H. He afterwards studied law at Columbian, now George Washington, University. At the same time he held a clerkship in the State Department, but this he resigned and secured a consular clerkship at Yokohama. At this time Japan was beginning to yield to the march of civilization and Denison, not content with his consular duties, spent all of his spare time in the study of international law. Some important cases came to him and his treatment of them was so thorough that his talents were soon brought to the attention of the Japanese Foreign Office. In 1880 he was invited to join the permanent staff of the office as Minister of Foreign Affairs. Mr. Denison saw Japan rise from comparative obscurity to become a great world power, and Japanese statesmen have not been slow to recognize that a great deal of their country's progress was due to the American who was a friend and confidential adviser of emperors, and of the men who guided Japan through her most serious troubles. There was not an important foreign affair in Japan in the last thirty years in which the legal adviser to the Department of Foreign Affairs did not have a controlling hand. In the dangerous days of the war with Russia he was always at the side of Count Mutsu, then Minister of Foreign Affairs. At the end of the war he was summoned to the Japanese court, where he received a handsome grant of money and the personal thanks of the royal family. His next great service was as adviser to the Japanese government in the negotiations for the first treaty alliance with Great Britain. He is also said to have been the author of the remarkable correspondence from Tokio which preceded the war with Russia. Mr. Denison was practically unknown except to the diplomatists of the world until the time of the Portsmouth Peace Conference. It was then generally perceived that he was and had long been the power behind the Japanese throne. At Portsmouth he represented Japan in drafting the treaty of peace with Russia, and the work he did was so noteworthy that he was recognized as the foremost figure in diplomacy, and the Emperor conferred upon him a high decoration. In an official statement issued after his death he was called one of the greatest benefactors of Japan. His appointment as legal adviser to the Japanese Foreign Office dates from May 1, 1880, and continued until the time of his death. He was a member of the Permanent Court of Arbitration of The Hague.

DENMARK. A country in northern Europe, between the North and the Baltic seas; a constitutional monarchy. Its capital is Copenhagen.

Area and Population. The area and population by insular and mainland divisions are shown in the following table, the area being given in square kilometers, population according to the census of Feb. 1, 1911, with comparative figures for 1840:

	Sq. km.	*Pop. 1911*	*Pop. 1840*
Islands:			
Seeland	7,498.34	1,096,897	468,477
Bornholm	1,587.58	142,885	25,199
Lolland-Falster	1,791.23	115,658	71,402
Fyn	3,474.16	303,179	183,857
Jutland:			
Southeast J.	7,320.70	482,264	217,656
Southwest J.	10,783.20	364,620	170,459
North J.	7,563.54	351,573	157,025
Total Denm'k proper	38,968.70	2,757,076	1,289,075
Faroe Islands	1,398.90	18,000	7,314
Total	40,367.60	2,775,076	1,296,389

The males in 1911 numbered 1,337,900, and the females 1,419,176. The rural population numbered 1,647,350, an increase of 81,765 over that of 1906; the urban population numbered 1,109,726, a gain of 86,392 over that of 1906. The total population as estimated July 1, 1912, numbered 2,800,000. Average density per 100 square kilometers for Denmark proper, 7075. The marriages in 1911 numbered 19,879; living births, 73,938; still births, 1751; deaths, 37,232. Emigration over seas in 1912, 8366—5965 to the United States.

Agricultural pursuits in 1911 occupied 1,003,803 persons, both active and dependent; industrial pursuits, 752,203; the professions, 141,909; commerce and transportation, 458,030. Copenhagen (Köbenhavn), covering 28 square miles, had in 1911, 462,161 inhabitants (with the suburb Frederiksberg, 559,398); Frederiksberg, 97,237; Aarhuus, 61,755; Odense, 42,237; Aalborg, 33,449; Horsens, 23,843; Randers, 22,970; Esbjerg, 18,208; Vejle, 17,261; Fredericia, 14,228; Kolding, 14,219; Helsingör, 13,783; Svendborg, 12,667; Nyköbing, 11,010; Viborg, 10,885.

Education. Primary education is free and compulsory between the ages of 7 and 14; the schools are maintained by local taxation. The secondary schools are maintained or aided by the State. There are many special schools, the most numerous being horticultural and agricultural. There is a university at Copenhagen. There were in 1912, 3431 communal schools, with 381,879 pupils, and 9697 teachers. The University of Copenhagen, founded in 1479, has five faculties, to all of which women are admitted on equal terms with men. From 400 to 500 students matriculate annually. The Lutheran is the established religion; complete religious toleration prevails.

Production. Of the total area, 80 per cent is productive, and one-sixth of the remainder is in peat bogs. The law prohibits the condensation of a number of small farms into one estate; the soil is therefore greatly subdivided. Less than one-half the productive area is under crop, the remainder being forest, pasture, and meadow. The total crop area in 1907 was 3,896,870 hectares, distributed among principal crops as follows: 1,122,761 hectares under cereals, 308,362 under roots, 27,247 under industrial plants, 1,229,585 under grasses (including meadows, pasture, and forage plants), 230,413 fallow, 978,502 under other crops, including gardens, parks, etc. The table below gives area in hectares sown to main crops in 1912–13 and 1913–14, with the yield in quintals for both years, together with the yield per hectare in 1912–13:

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*Ha.*
Wheat ..	54,044	54,044	1,822,078	1,279,178	33.7
Rye	245,786	245,786	4,319,518	4,738,294	17.6
Barley ..	241,409	241,409	5,956,184	4,974,452	24.7
Oats ...	428,887	428,887	8,290,168	6,729,225	19.4
Beets* ..	32,370	30,900	9,300,077	6,018,361	287.3
Potatoes	61,141	61,141	10,697,878	7,770,217	175.0

*Sugar beets.
Figures for 1913-1914 are subject to revision.

Dairying is an important industry. In 1911 there were 681 creameries in operation, with 104,557 work people; the milk employed was from 605,208 cows, with an average production of 2570 kilos of milk per cow. The live stock estimate of July, 1910, returned 535,018 horses, 2,253,982 cattle, 726,829 sheep, 40,257 goats, 1,467,822 swine.

Industrial Enterprises in June, 1906, numbered 12,379, employing 104,435 persons, in the capital; 20,236, employing 98,585, in provincial towns; 52,627, employing 114,066, in the rural communes. The value of the fisheries products for 1911 was given at 15,230,200 kroner, of which 9,844,000 kroner were for fish from the waters south of Skagen. The beet-sugar mills numbered nine in 1912, with a total production of 134,670 metric tons. There were 26 margarine factories, with a total output of 39,620 metric tons.

Commerce. The general and special trade by great classes in 1912 is shown in the table below with value in thousands of kroner:

	Imports		*Exports*	
	Gen.	*Spec.*	*Gen.*	*Spec.*
Provisions	251,699	211,488	560,557	518,791
Raw products ..	313,986	287,021	99,176	66,966
Manures, etc. ..	113,721	110,877	12,460	9,889
Fuel	67,070	66,838	288	17
Other*	71,036	63,791	9,651	1,560
Total	817,512	740,015	682,082	596,728

* Includes goods for personal and household use.

Totals for the general and special trade for the three years previous to 1912 are shown below in thousands of kroner:

	General		
	1909	*1910*	*1911*
Imports	725,087	684,407	705,500
Exports	608,081	548,074	626,761
	Special		
	1909	*1910*	*1911*
Imports	566,782	577,166	623,314
Exports	443,822	485,374	536,647

The principal articles of import for home consumption in the 1911 trade are given as follows, with values in thousands of kroner: Cereals, 92,693; oilcake, 56,282; coal, 45,276; iron manufactures, 35,419; wood, 28,869; fibre manufactures, 20,305; woolen manufactures, 19,237; coffee, 17,880; skins, 11,981. Exports of domestic produce, values in thousands of kroner: Butter, 192,783 (89,577,100 kilos); meats, 137,222; animals, 61,919; eggs, 29,366; skins, 12,709; barley, 10,276; fish, 7831; ships, 5372; iron manufactures, 3647.

In the table below are shown the principal countries of origin and destination in the general trade for 1912:

	Imports	*Exports*
Germany	314,286	181,646
United Kingdom	185,887	373,104
Sweden	69,060	33,352
Norway	9,166	18,541
Russia	56,179	16,347
Netherlands	20,868	5,270
Belgium	9,902	1,726
France	19,406	3,302
Colonies	9,990	7,510

There were entered at the ports in the 1912 trade, 38,667 vessels of 4,387,258 tons cargo; cleared, 39,339 vessels of 1,623,077 tons cargo. The merchant marine included Dec. 31, 1912, 3294 vessels of 506,624 registered tons, of which steamers 642, of 415,436 tons.

Communications. At the end of 1912 there were 2303 miles of railways in operation, of which 1214 miles were State-owned. Cost of construction to March 31, 1912, 288,579,344 kroner. There are 4213 miles of highways, and 22,506 miles of byways. Length of State telegraph wires, March 31, 1913, 8081 miles; offices, 179; railway offices, 395. Telephone wires, 303,405 miles. Post offices, 1137.

NAVY. The fleet, maintained for purposes of coast defense, includes an old battleship, a cruiser, some small craft, and four monitors, three torpedo gunboats, fourteen first-class torpedo boats, and three submarines. Five torpedo boats and two submarines were building in 1913.

FINANCE. The monetary unit is the krone, par value $0.26799. Revenue and expenditure for comparative years are shown in the table below in kroner (A—receipts running account; AA—receipts from capital; B—expenditure running account; BB—expenses charged to capital):

	1910-11	*1911-12*	*1912-13*
A	91,858,855	102,102,426	114,175,582
AA	52,088,148	69,888,162	80,842,814
Total rev..	143,436,998	171,985,588	194,518,896
B	108,755,040	107,802,849	106,882,288
BB	36,741,102	66,954,710	88,601,075
Total Exp.	140,496,142	174,757,559	189,988,863

Details of the budget for 1914–15 are shown in the table below, in thousands of kroner:

Rev.	*1000 kr.*	*Exp.*	*1000 kr.*
Ind. taxes	62,338	War	18,850
Direct taxes	37,786	Worship, etc. ..	16,018
Interest	7,565	Interior	14,987
Separate rev.	6,648	Debt	14,571
Real estate	4,581	Interest, etc.....	12,274
Posts & tels.	2,155	Marine	9,985
Lotteries	1,516	Justice	9,950
Domains	1,071	Finance	7,862
		Other	15,211
Total	128,606	....	119,457

The public debt stood March 31, 1913, at 358,040,928 kroner.

GOVERNMENT. The executive vests in a King, aided by responsible ministers. The King in 1914, Christian X, succeeded his father to the throne of Denmark, May 14, 1912. He was born Sept. 26, 1870; he married, April 26, 1898, Alexandrine, Duchess of Mecklenburg. The prince royal is Christian Frederik Michael, born March 11, 1899. Another son was born July 27, 1900—Knud Christian. The legislative authority resides in the Rigsdag, which consists of an upper house of 54 elected and 12 nominated members, and a lower house of 114. The ministers may vote only in the chamber of which they are members, but have free access to both houses. The ministry appointed June 21, 1913, was composed as follows: C. T. Zahle, premier and minister of justice; E. Scavenius, foreign affairs; O. Rode, interior; P. Munch, defense; E. Brandes, finance; S. Keiser-Nielsen, public instruction and worship; K. Pedersen, agriculture; J. H. Juergensen, public works and commerce (ad int.).

ARMY. Denmark maintains an active militia with permanent cadres, so that on a war footing some 90,000 men could be turned out. Service is compulsory beginning at 21 years of age and lasting for 16 years. The recruits on joining are drilled continuously for 165 days in the infantry, 280 days in the field artillery, 1 year in the garrison artillery, 200 days in the cavalry, and various terms for the technical troops. In some cases the training is extended, but after the first period there are only brief annual exercises each year. The organization is in two territorial commands, one including Copenhagen and the first and second Zealand brigades, and the other the Funen brigade and the first and second Jutland brigades. There are 15 regiments of infantry of 53 battalions in all, 4 regiments of cavalry, 2 regiments of field artillery, with 20 4-gun batteries, 4 garrison artillery battalions, and 3 battalions of engineers. The five brigades making up the field army would have an apparent fighting strength of 50,000. The effective strength of the cadres of officers and noncommissioned officers and horses of the permanent strength, according to the budget for the fiscal year 1914–15, was as follows: 13 generals, 95 colonels and lieutenant-colonels, 268 captains, 384 lieutenants, 1663 noncommissioned officers, and 3269 horses. The budget for the fiscal year 1914–15 amounted to 18,348,963 crowns.

HISTORY. On June 9 the Folkething passed by 102 votes to 6 a bill for the amendment of the Constitution in accordance with the report of a joint commission of the Folkething and the Landsthing. In the Landsthing, the Conservative groups, being opposed to the measure, by their absence deliberately prevented a quorum. Nevertheless a division was taken and the 33 members of the Left voted "aye," while 32 Conservatives were absent. The president of the Landsthing, as a matter of course, ruled that the vote was insufficient and invalid unless more than half the 66 members voted. The premier, M. Zahle, threatened to dissolve the Landsthing. A few days later a State Council was held, and it decided to dissolve the Landsthing in compliance with M. Zahle's request, although in obedience to the King it refused to concede M. Zahle's contention that the 12 members nominated by the King, as well as the 54 elective members, should be deprived of their mandates.

On June 29 the elections began for the 54 elective seats. Five members of the Right lost their seats, so that the new Landsthing was constituted as follows: 20 Conservatives, 5 Free Conservatives, 20 Left, 5 Radicals, and 4 Socialists. As 9 of the 12 appointed members were favorable to the Constitutional Reform, there was now a majority of 38 to 28 for the bill abolishing the property qualifications for the elections to the Landsthing and depriving the Crown of the right to nominate 12 members.

In May, Prince Harald, the younger brother of the King, acted as regent while the royal family voyaged to England on the royal yacht, accompanied by two Danish warships. From May 9 to May 13, King Christian was entertained in London, banqueting at Buckingham palace, attending a gala performance at the opera, and receiving the decoration of the Order of the Garter. Subsequently he visited Brussels, Amsterdam, and Paris, where he was received with equal courtesy and entertained with even more lavish hospitality. In connection with the great European War, it should be noted that Denmark, commanding the natural entrance to the Baltic Sea, occupied a strategic position of tremendous importance; and also that the serious interruption of traffic in the North Sea, as the result of British and German naval operations, inflicted grave injury upon Danish commerce. For the three-cornered peace agreement between Denmark, Norway, and Sweden, see SWEDEN. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

DENNIS, JAMES SHEPARD. An American

Presbyterian missionary, died March 21, 1914. He was born in Newark, N. J., in 1842 and graduated from Princeton in 1863. He then studied at the Princeton Theological Seminary, graduating in 1867. In 1868 he was ordained to the Presbyterian ministry, and in the same year became a missionary in Syria. He remained in that country until 1891. From 1873 to the latter date he was principal of, and professor at, the Theological Seminary at Beirut. From 1892 until his death he was an honorary member of the Syria Mission. He was a member of the Presbyterian Board of Foreign Missions, and was secretary to the board of trustees of Syrian Protestant College. In 1910 he was a member of Commission No. 1 at the World Missionary Conference in Edinburgh. He was a member of many historical, scientific, and patriotic societies. His published writings include: *Foreign Missions after a Century* (1893); *Christian Missions and Social Progress* (1897, 1899, 1906); *Centennial Survey of Foreign Missions* (1902); *The New Horoscope of Missions* (1908). He also wrote several theological treatises in the Arabic language, and was joint editor of the *World Atlas of Christian Missions* (1911).

DENTAL SCHOOLS. See UNIVERSITIES AND COLLEGES.

DENTISTRY. In August the Sixth International Dental Congress was held in London, the president, J. Howard Mummery, presiding, and 2000 delegates being present. Sir R. J. Godlee read a paper on oral toxæmia; Mr. Norman Bennett one on "The effects of dental treatment on national health and physique"; and there were other significant papers and addresses. The British Dental Association tendered the congress a reception at the Natural History Museum, South Kensington. American events of the year were the following: The annual meeting (July 1) of the Pennsylvania State Dental Association, at which Dr. Michael F. Barrett read a notable paper on his discovery of the germ of pyorrhea; the annual convention, with installation of officers, of the National Dental Association, held in July; and the annual meeting (July 11) of the Mouth Hygiene Association, at which there were addresses by Dr. E. H. Levinsky-Corwin, Dr. E. G. Routzahn, and others, and at which Dr. H. W. Wiley was chosen president, and a plan formed for the appointment of a commission to revise the regulation of the society.

DEPARTMENT STORES. See ARCHITECTURE.

DE PAUW UNIVERSITY. An institution for higher learning, founded in 1837 at Greencastle, Ind. There were in 1914, 972 students in all departments, with 42 members of the faculty. The productive funds amount to about $925,000, and the annual income to about $105,000. The library contains about 45,000 volumes. The president is George Richmond Grose, D.D.

DÉROULÈDE, PAUL. French poet, author, and patriot, died Jan. 30, 1914. He was born in Paris in 1846 and was educated at the Lycée Louis le Grand and at Versailles. He studied for the bar and obtained a degree, and after practicing for two years he gave up law to become an officer in the French army at the outbreak of the Franco-Prussian War. He was captured at the Battle of Sedan and was taken to Germany, but escaped and served with distinction in the campaign of the valley of the Loire. He took part in the two sieges of Paris, the first against the Germans as a defender, and the second as an aggressor against the Commune. Déroulède was a nephew of Emile Augier, and in 1872 he first appeared as a poet under the patronage of his uncle with *The Songs of a Soldier*. This volume met with great success and was followed by a second, after which his reputation was established. His principal dramatic work was *Hetman*, a drama in five acts in verse. This was produced in 1877 at the Odéon. It met with instant success and had a large number of performances. Déroulède was an ardent patriot; he was active in politics, and his fearless writings in the daily press involved him in many controversies, and duels. When General Boulanger made his attempt to bring about a revision of the Constitution in 1889, Déroulède warmly supported his cause. Eleven years later he was banished from France on account of his activities in the Nationalist campaign and he remained abroad for five years. He was then pardoned and returned to France. He served as Deputy from Angoulême and was for a time the head of the League of Patriots.

DESMOULIN, FERNAND. A French painter, engraver, and philanthropist, died July 16, 1914. He was born in 1853. In 1885 he won honorable mention at the Salon and received a medal of the third class in 1889. He also won medals at the World's Columbian Exposition at Chicago, the Lyons Exposition and other expositions. He was a chevalier of the Legion of Honor. In Paris he was known as the "lay prison chaplain" because of his interest in prisoners and ex-convicts. He visited and helped the inmates of the city's prisons and often continued to help the convicts after they had been released.

DE VINNE, THEODORE LOW. An American printer, died Feb. 16, 1914. He was born at Stamford, Conn., Dec. 25, 1828. After learning the printing trade at Fishkill, N. Y., he was employed on the Newburgh (N. Y.) *Gazette*. In 1849 he became an employee of Francis Hart of New York, was junior partner in the firm in 1857–77, and after Hart's death changed the firm name to Theodore L. De Vinne & Co. (1883) and finally to the De Vinne Press. His establishment on Lafayette Street, equipped as a model plant, gained an international reputation for the quality of its presswork. *St. Nicholas* and the *Century Magazine* were printed by the firm from the date of their founding (1873, 1874). De Vinne was a leader in the improvement of typography, and founded the National Typothetæ Society, of which he was elected president in 1896. He contributed to the NEW INTERNATIONAL ENCYCLOPÆDIA; and published: *Printer's Price List* (1869); *The Invention of Printing* (1876); *Historic Printing Types* (1886); *Christopher Plantin* (1888); *Plain Types* (1890); *The Practice of Typography* (1900); *Correct Composition* (1901); *Title Pages* (1902); *Modern Methods of Book Composition* (1904); *Notable Printers of Italy during the Fifteenth Century* (1910); and many magazine articles on similar subjects.

DIAMONDS. The diamond mining industry in 1914 was badly demoralized by the war in Europe, as a consequence of which some of the largest producers ceased operations. The principal centres of the cutting industry are Antwerp and Amsterdam, while the greater proportion of the crude stones for gem purposes comes from the Transvaal and Orange River colonies, with a smaller supply from German Southwest Africa. The new mines in Arkansas have not afforded any large quantity of stones. A shipment of some importance from the Belgian Congo called attention to this field as a possible rival in the future for the supremacy long held by South Africa, as according to recent accounts the beds in the Congo country are extensive and quite promising, consisting of both alluvial and volcanic deposits. One of the volcanic pipes under exploration has an area of 45 acres, and there are many others which were to be tested when conditions became more settled. The discoveries lie mainly in the Katanga and Kasai River regions. See GEMS AND PRECIOUS STONES; MINERALOGY.

DIAMONDS, ARTIFICIAL. See CHEMISTRY, INDUSTRIAL.

DIESEL ENGINE. See INTERNAL COMBUSTION ENGINES.

DIETETICS. See FOOD AND NUTRITION.

DILLON, JOHN FORREST. An American jurist, died May 5, 1914. He was born in Northampton, N. Y., in 1831. At the age of seven he removed with his parents to Davenport, Iowa. He worked his way through the Medical School of the University of Iowa, at which he graduated in 1850, but after six months' practice of medicine he gave it up to study law. In 1852 he was admitted to the bar, and in the same year was chosen prosecuting attorney of Scott Co., Iowa, serving until 1858, when he was elected judge of the seventh judicial district of Iowa. In 1863 he became a judge of the Iowa Supreme Court and in 1869 was appointed judge of the United States Circuit Court for the eighth judicial district. He resigned from the Federal bench in 1879 to become professor of real estate and equity jurisprudence at the Columbia Law School in New York City. In 1882 he resumed private practice, acting as general counsel for the Union Pacific Railroad, the Missouri Pacific Railroad, the Western Union Telegraph Company, and the Texas Pacific Railroad. He represented all the interests held by the Gould family, and after the death of Jay Gould, continued as counsel for these interests. He was also counsel for the Interborough Rapid Transit Company of New York City. He was a well-known authority on municipal corporations, and his work on the subject, *Municipal Corporations*, met with great success. He prepared a fifth edition of this work in five octavo volumes when he was 79 years of age. Other legal writings include: *United States Circuit Court Reports; Removal of Causes from State to Federal Courts; Municipal Bonds; Laws and Jurisprudence of England and America;* and *Life, Character and Judicial Services of Chief Justice Marshall*. He received the degree of LL.D. from Iowa College and Cornell College.

DIPHTHERIA. Behring's diphtheria vaccine, notice of which appeared in the YEAR BOOK for 1913, was used in a large number of cases during 1914, but principally in Germany. Kissling used the new vaccine in the Hamburg General Hospital to immunize 310 children who had been exposed to diphtheria. This was done during an unusually virulent epidemic. Of the 310 children thus protected only 8 contracted diphtheria. Among the 111 who were given a second injection no cases whatever contracted the disease. Further trials were made of the preventive qualities of Behring's vaccine in the Magdeburg Municipal Hospital at Sudenburg. Here about 500 children were vaccinated by physicians of the hospital in six small towns and villages in a district where diphtheria prevailed in epidemic form. None of these children, it was stated, contracted diphtheria, although the disease continued epidemically in this vicinity. Apparently no bad results were observed. Von Behring's vaccine was said to be a mixture of a powerful diphtheria toxin with antitoxin, combined in such proportions that the resultant serum possesses a slight surplus of the toxin. The remedy appears to confer an active and relatively long period of immunity, while antitoxin confers only a short and passive immunity. See ANTITOXIN.

DIRIGIBLES. See AËRONAUTICS.

DISASTERS AT SEA. See SAFETY AT SEA.

DISCIPLES OF CHRIST. There are two branches of this denomination, the Disciples of Christ proper and the Church of Christ. The first is the more important of the two. In this branch of the denomination there were in 1913, 1,362,711 communicants, with 9076 churches and 5592 ministers. The Church of Christ had about 157,000 communicants, 2700 churches, and 2100 ministers. The churches of the denomination lie chiefly in the Middle West and in the South, though it is represented in nearly every State in the Union. Churches are also found in Australia and other parts of Great Britain, in Cuba, Canada, Scandinavia, and the Philippines. There are about 10,000 Bible schools with an enrollment of about 900,000 children. The denomination has under its auspices 30 schools and colleges. Missionary work is carried on in several countries in Asia, in Hawaii, Cuba, and the Philippines.

DISEASE CARRIERS. See INSECTS AND THE PROPAGATION OF DISEASE.

DISEASES, OCCUPATIONAL. See LABOR LEGISLATION and OCCUPATIONAL DISEASES.

DIVORCE. See MARRIAGE AND DIVORCE.

DOCKS AND HARBORS. During the year construction was active on the 1000-foot piers in the North River at New York City. There was in process of construction a pier 150 feet wide and 1000 feet in length at the foot of West 46th Street, with a berth to the north and to the south, and a half pier on the northerly side of West 44th Street 1000 feet in length, with a 1000-foot berth to the north. This work involved one of the largest and deepest cofferdams ever built, when the shore end of the site of these piers was being laid bare for excavation. This cofferdam was made up of continuous cells of steel sheet piling somewhat similar in construction to that used at Black Rock Harbor, in Buffalo, and around the wreck of the *Maine* in Havana. In the North River, however, the sheet piling cells were backed up by a heavy filling of riprap, so that the backs of the piling virtually formed the seal of the cofferdam, and were held in place by this fill. The contract under way in 1914 was for placing about 3500 tons of steel in the cofferdam, and 99,000 cubic yards of riprap in the embankment, the removal of 76,000 cubic yards of rock, and the placing of 14,000 cubic yards of concrete masonry. The basin created by the cofferdam covered an area of about 800 feet in length, about 300 feet in width, and involving about 55,000,000 gallons of unwatering. This improvement was one of the most notable for the city of New York and was the beginning of much needed extension of the port facilities.

Ore Dock at Duluth. During the year there was under construction at Duluth, Minn., the foundations of the largest ore shipping dock in the world, it being the fifth and latest ore shipping dock of the Duluth, Missabe and Northern Railway Company. The foundations were 2146½ feet in length, and contained 24,225 cubic yards of concrete. The dock was to have a storage capacity sufficient to load 14 vessels with 8000-ton cargos of ore. On the inside of the dock 4½ feet of concrete capping was placed on 14,600 round piles, while on the outside faces the concrete was 7½ feet thick increasing in height by three one-foot spaces. Between the two outer rows of round piles steel interlocking sheet piles 40 feet long were driven 6 inches below low water around the entire dock, to retain the sand pumped in from the bay and filled to within 18 inches of low-water mark. The concrete-capped piles, with the mile of sheet steel piling enclosing the sand fill, will support ore bins holding 112,000 tons. The columns for the dock were raised on 395 concrete pedestals, 5 feet square on top. The construction of this dock involved a special concrete-handling plant.

San Francisco Dry Dock. During the year a contract was made between the United States government and the Union Iron Works Dry Dock Company of San Francisco, whereby a $2,000,000 dry dock was to be built in San Francisco Harbor under the guaranty that the government would furnish at least $50,000 business each year for six successive years. The length of the new dock was to be 1096 feet over-all, breadth between the vertical walls 120 feet, breadth to the top of altars 140 feet 8 inches, and depth from mean high water to top of sill 42 feet 6 inches. The dock will be closed by an outer caisson floating and sliding into a transverse recess at the side of the concrete structure. The foundation will be of solid rock and the structure of reënforced concrete, designed to withstand earthquake shocks. The dock with the tunnels for flooding or unwatering was to have capacity of 5,715,000 cubic feet, and be provided with four 54-inch vertical centrifugal pumps with a capacity of 75,000 gallons per minute, pumping against a head up to 42 feet. These pumps are directly connected to 750-horsepower motors, which operate at 250 revolutions per minute.

Balboa Dry Dock. Among the large dry docks under construction during the year was the Balboa Dry Dock at the Pacific terminal of the Canal Zone. The dimensions of this dock were:

Length over-all	1110.0
Maximum length of ship dockable	1000.0
Width of entrance, clear	110.0
Width of body of dock at coping	140.0
Width of body of dock at floor	117.0
Depth, coping to floor	56.0
Height of keel blocks	4.5
Depth of water over tops of blocks mean sea level	35.0
Mean high water	41.5
Mean low water	29.8

During the year the Pearl Harbor Dock at Hawaii, in which difficulties of construction were encountered which required its rebuilding, was planned by the United States government for a length of 1029 feet in place of the 831 feet of the original structure whose foundations failed during construction.

The third annual meeting of the National Association of Port Authorities was held at Baltimore, December 8, 9, and 10, at which a number of papers dealing with such subjects as Federal, State, and local control over ports and water fronts were presented. Col. William M. Black, U. S. A., of the Corps of Engineers, interested in the New York harbor improvement, and D. F. Cresson, Jr., Chief Engineer of the New Jersey Harbor Commission, were among those who presented papers.

Canadian Docks. Late in the year the Dominion government of Canada, through the Department of Public Works, was preparing plans for the construction of a dry dock 180 by 1150 feet at Halifax, Nova Scotia, at an estimated cost of $3,000,000, Somewhat earlier the Amalgamated Engineering Company secured a subsidy from the Canadian government for the construction of a dry dock at North Vancouver, British Columbia. This structure was to be 100 by 1150 feet, but divided into two compartments of 500 and 650 feet respectively; the estimated cost was $6,500,000. Early in 1914 the city of Toronto began work on a $25,000,000 harbor development plan, which includes the construction of a large sea wall and breakwater; a park and boulevard within the borders of the lagoon so formed; a large industrial district formed by filling in shallow water, giving some 646 acres for factory sites; and a new set of docks to replace the existing piers, which alone were estimated to add from $5,000,000 to $6,000,000. The dock development, however, was not to be undertaken at once.

British Docks. The new joint dock at Hull, England, built by the North-Eastern and Hull and Barnsley Railway Companies, was opened by King George in June after having been under construction since 1909. The water area of this dock was 85 acres, and it has a length of 6162 feet of quay, with a lock 750 feet long by 83 feet wide, and a depth of water over the sill at high water of 41½ feet. There are also two graving docks, the largest being 550 feet in length.

On the west coast of England in July the new entrance lock of the South dock extension at Newport was opened. This dock covers 96 acres and is 4000 feet long by 1000 feet wide. The lock is 1000 feet wide and is provided with three sets of gates of 1000 feet, 600 feet, and 400 feet alternatively. The depth of water over the sill is 45 feet at spring tide and 20 feet at neap tide. The channel 2 miles long, having a bottom width of 650 feet, was dredged from the mouth of the Eske to the lock. The pumping plant has a capacity of 10,000,000 gallons of water per hour. In Scotland, at Rosyth, progress was being made on the great naval base, the contracts under way including the construction of a main deep water basin covering 55 acres, with an entrance channel from the fairway, and three graving docks, 750 feet long and 110 feet wide. These works require the reclamation of 3000 acres of land from the sea. During the year some 3000 men were employed on the work and its extension will doubtless require extra assistance. In London the construction of the new Albert Dock was vigorously undertaken. The contract for the gates, lock, bridges, and other appliances had been placed in the hands of a German firm whose price was the lowest at the time bids were invited, but it was cancelled and the work given to English contractors.

During the year the port improvements of Buenos Aires suffered a serious blow in the bursting of the dock dam, and a complete inundation of the works. The damage was estimated at $1,000,000. Costa Rica, subject to the approval of Congress, signed a contract for the development of Port Tortuguero during the year.

DODGE, Grace Hoadley. An American educator and philanthropist, died Dec. 27, 1914. She was born in New York in 1856, the daughter of William Earl and Sarah (Hoadley) Dodge. For more than thirty years she was interested in charitable and educational work in her native city. She was the first woman to be appointed to the Board of Education, and after taking an active part in the founding of Teachers College, which later became part of Columbia University, she was chosen treasurer of the college. From its organization she was president of the National Board of the Young Women's Christian Association. Besides many other gifts, seldom made public, in 1912–13 she gave $375,000 to the $4,000,000 campaign fund of the Y. W. C. A.-Y. M. C. A. in New York, a large part of this amount being devoted to the National Board building of the Y. W. C. A. She organized the Working Girls' Society and the Travelers' Aid Society, whose trained women are in railroad stations and at steamship piers throughout the country. She was also president of the board of trustees of the American College for Girls at Constantinople. Her will made provision for the following large gifts: to Teachers College, $500,000; to the National Board of the Y. W. C. A., $500,000; to the Y. W. C. A. of New York, $200,000; to the American College for Girls at Constantinople, $50,000; to the Presbyterian Board of Home Missions and the Board of Foreign Missions, the Travelers' Aid Society, and the New York Y. M. C. A., each $25,000. Besides editing *Thoughts of Busy Girls* (1892), she was co-author of *What Women Can Earn* (1899), and wrote *A Bundle of Letters to Busy Girls on Practical Matters* (1897), which appeared in several languages.

DOLAN, Thomas. An American financier, died June 12, 1914. He was born in Montgomery Co., Pa., in 1834. His father died when he was still a small child, and for several years the boy supported his widowed mother, acting as clerk in a retail dry goods store. At the age of 27 he started his own textile factory and ten years later turned to the manufacture of worsteds and cassimeres. From that time on he was recognized as one of the leading manufacturers of Philadelphia. As other enterprises began to demand much of his time he retired from manufacturing in 1897, and shortly after he became associated with William L. Elkins and P. A. B. Widener in acquiring and constructing street railways in Philadelphia. After various manipulations they brought about a combination of all the street railways in the city. These financiers then turned their attention to street railways in New York City, and by 1893 they controlled practically every piece of rolling stock in that city. With them were associated Thomas F. Ryan and William C. Whitney. The profits from these enterprises were enormous. In 1892 Mr. Dolan became president of the United Gas Improvement Company of Philadelphia, and under his management this became the greatest company of its class in the world. Mr. Dolan's fortune at the time of his death was estimated at between $20,000,000 and $35,000,000.

DOMESTIC RELATIONS COURT. See section so entitled under Marriage and Divorce.

DOMINICA. A West Indian island; a presidency of the Leeward Islands (q.v.). The island is mountainous and plentifully watered. The soil is fertile, but coffee and sugar cultivation has declined. Cacao, limes, spices, oils, and timber are exported. In 1912 the export of cacao was 11,877 cwt.; the export of limes and limejuice was valued at £79,848, citrate of lime £11,991, essential oils £5303, fruit and vegetables £3942. Total imports, 1912, £159,529 (£164,695 in 1911); exports, £152,458 (£124,678). Revenue, 1912–13, £45,300 (£44,054 in 1911–12); expenditure £40,304 (£38,792). Total tonnage entered and cleared, 1912–13, 578,892, of which 486,564 tons British. Public debt Dec. 31, 1912, £45,195. Customs revenue, 1912–13, £24,295. Roseau, the capital, has 6577 inhabitants. Administrator, 1914, W. Douglas Young. See Leeward Islands.

DOMINICAN REPUBLIC, or Santo Domingo. An independent State occupying the larger and eastern part of the island of Haiti. The capital is Santo Domingo.

Area, Population, etc. The republic is composed of 12 provinces, with a total estimated area of 48,577 square kilometers (18,756 square miles). The population (1913) is stated at 724,500. Estimated population of the larger towns: Santo Domingo, 22,000; Santiago, 20,000; Puerto Plata (the chief port) and San Pedro de Macorís, 15,000 to 16,000 each; La Vega, 10,000; Samaná, Sánchez, Monte Cristi, and Azua, 4000 to 5000 each. Reported marriages (1911), 2442; births, 27,407; deaths, 6603. Primary instruction is free and nominally compulsory. In 1911 there were 590 schools, with 20,453 pupils (10,422 boys and 10,031 girls). The State religion is Roman Catholicism.

Production, Commerce, etc. Of the total area, about 15,500 square miles, or nearly one-third of the country, is stated to be cultivable. Agriculture and cattle raising are virtually the only source of national wealth, as mining and manufacturing are little developed. The chief commercial crops are sugar and cacao; other important products are tobacco, coffee, cotton, and bananas and other fruits.

Imports and exports have been valued as follows, in thousands of American dollars:

	1909	*1910*	*1911*	*1912*	*1913*
Imports	4,426	6,258	6,950	8,218	9,273
Exports	8,114	10,850	10,996	12,385	10,470

Leading imports in 1913: cotton goods, 1880 thousand dollars; iron and steel manufactures, 1346; provisions, 2607; bags, sacks, etc., 281; chemicals and drugs, 213; leather and manufactures thereof, 276; agricultural implements, 143. By far the most important exports are sugar and cacao. The development of the latter in recent years is especially noteworthy. Sugar and cacao in 1909 were exported to the value of $3,304,931 and $2,759,191 respectively; in 1910, $5,590,536 and $2,849,585; in 1911, $4,159,733 and $3,902,111; in 1912, $5,841,357 and $4,248,724; in 1913, $3,120,000 and $4,651,000. For 1912 and 1913 respectively, other exports are reported as follows, in thousands of dollars: leaf tobacco, 670 and 1122; bananas, 112 and 296; coffee, 566 and 257; hides and skins, 235 and 241; woods, 126 and 167; beeswax, 149 and 118. Trade by countries, in thousands of dollars:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United States	5,100	5,769	7,275	5,601
Germany	1,628	1,678	1,774	2,068
United Kingdom	720	730	1,248	242
France	225	274	938	888
Others	545	820	1,160	1,671
Total	8,218	9,271	12,885	10,470

In 1912, vessels entered at the ports in the foreign trade numbered 599, of 407,748 tons; cleared, 477, of 379,147 tons.

Railway in operation, 282 kilometers (175 miles). In addition there are private lines for sugar plantations reported at 362 kilometers (225 miles). The completion of a few kilometers of line from Salcedo to Moca will effect rail communication between Puerto Plata, on the north coast, and the eastern port Sánchez, on the Bay of Samaná. There are reported 16 telegraph offices, with 352 miles of line; telephone line, 719 miles; post offices, 105.

Finance. For the fiscal year 1912-13, revenue and expenditure are reported at $5,809,785 and $5,845,994 respectively; for 1913–14, $5,035,250 and $4,890,216. By far the greater part of the revenue is derived from customs. A treaty between the Dominican Republic and the United States authorized a loan of $20,000,000 for the conversion of the debt, and established an American receivership of customs, from April 1, 1905.

Government. The executive authority is vested in a President, who, according to the constitution, is elected by indirect vote for six years. The legislative power devolves upon a Congress of two houses, the Senate (12 members, elected for six years) and the Chamber of Deputies (24 members, elected for four years). In 1913 José Bordas Valdés was elected Provisional President, assuming office April 14.

History. The fear that the government of Provisional President José Bordas Valdés would prove no more stable than its predecessors was confirmed early in 1914 by frequent manifestations of unrest and discontent. Although the Senate rejected the impeachment charges which had been preferred against the President, many politicians outside of Congress held to the conviction that the President had used his power to misappropriate the public revenues and to override the legislative and judicial organs of government. The anti-presidential party was still further antagonized when the government postponed the elections, which should have taken place on April 1–2. In May a presidential decree was issued fixing June 7 as the date for the election; the Presidential Electors were to meet on June 15 to choose the President, who would take the oath of office on July 1. But a revolution had already broken out in the northern province of Santiago. General Arias, the rebellious Governor of the province, was removed from office and outlawed. A rebel force under Gen. Mauricio Jimenes at La Vega surrendered in April to the Federal commander, Tancredo Savinon, and another band of insurgents at Santiago was forced to capitulate; but the rebellion was more successful at Puerto Plata, on the northern coast of the island, where the rebel forces were able to hold President Bordas Valdés's troops at bay. The severe fighting at Puerto Plata—that is, severe fighting for Santo Domingo—awakened such lively apprehensions in Washington that on May 1 the U. S. gunboat *Petrel* was ordered to Dominican waters, and a few days later the U. S. cruiser *Washington* joined the *Petrel*. On May 12 Captain Eberle of the *Washington* held a conference on board his ship in an unsuccessful endeavor to bring the insurgents and the government to an amicable agreement.

In the third week of May fresh life was infused into the insurrection by the arrival of a large consignment of arms and ammunition, which had been smuggled across the Haitian frontier. La Vega was recaptured for the revolution. Meanwhile the government forces were laying close siege to Puerto Plata, and the Dominican "navy" was blockading Monti Christi, the other northern seaport held by the rebels. In June a German cruiser, the *Strassburg*, was ordered to Puerto Plata for the protection of German interests. Several times Captain Eberle of the *Washington* had warned President Bordas Valdés not to direct his artillery fire at the town, inasmuch as the foreign residents of Puerto Plata might receive injury. On June 26, after an Englishwoman had been killed by a stray shot in the Puerto Plata fighting, the U. S. gunboat *Machias* steamed into the inner harbor, and with a few well-directed shots silenced one of President Bordas Valdés's batteries. The *Machias* came into action a second time early in July, replying to a few rebel shots which had chanced to hit the ship.

In August, during an armistice, which had been arranged by Captain Eberle, the United States government sent a regiment of U. S. marines and a mediatory commission—including Ex-Governor J. F. Fort of New Jersey; the United States Minister to Santo Domingo, James M. Sullivan; and the New Hampshire lawyer, Charles Smith—to make peace in the Dominican Republic. The diplomatic representations of the commissioners, and the presence of the marines, induced the warring factions to accept an agreement, which provided for the establishment of a provisional government and the institution of elections under the "observation" of watchers appointed by the United States. President Bordas Valdés resigned on August 27, and Congress elected Dr. Ramón Báez as the new Provisional President. Dr. Báez selected the following Cabinet officers: Interior, Sr. Enrique Jiménez; finance, Dr. Salvador Gautier; war, P. A. Lluberes; public works, Osvaldo Báez; justice, J. B. Peynado; foreign affairs, Ignacio M. González; agriculture, Pedro M. Mejía. The elections held under the "observation" of the United States resulted in a victory for Sr. Jiménez, but were so closely contested that party feeling continued to run high; and on November 24 the United States transport *Hancock* was ordered to Santo Domingo with 800 marines, news having been received of fresh revolutionary disturbances. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties.*

DOURINE. See VETERINARY MEDICINE.

DRAINAGE. UNITED STATES. Activity in the reclamation of swamp and other wet lands during 1914 has been more apparent in progress along lines already tried than in new kinds of undertakings. Legislative acts and judicial rulings in some States have placed drainage organizations upon a more secure basis, and in others there is agitation for revision of the drainage laws. The Virginia law has been revised considerably; the Supreme Court of Idaho has declared the drainage law of 1913 to be valid, overruling a lower court; a lower court has upheld the validity of New Mexico's drainage statute. However, the Black and Boggy Swamps Drainage District in South Carolina was dissolved by the County Court because the assessment exceeded the constitutional limit of taxation of the State. An appeal was not taken, although there is precedent in North Carolina and other States for holding that assessments for local benefits are not subject to the legal limits of taxation. The bill introduced in Congress by Senator Newlands, permitting the Federal government to take charge of interstate and other drainage projects, even loaning the necessary money to the districts, has not yet received the consideration of Congress.

Among the Eastern and Southern States, North Carolina easily leads in the number of drainage districts formed; an increasing portion of the work is the enlargement of creek channels in the rolling Piedmont section. The State is coöperating with the U. S. Department of Agriculture in the encouragement of tile drainage, and of terracing to prevent erosion on cultivated hillsides. A special engineering commission has prepared plans for the main drains recommended as necessary and sufficient for draining the Everglades of Florida. In the upper Mississippi Valley, drainage of farm lands and of marsh lands continues rapidly, by individuals and by community projects organized under laws that have been in force for a number of years. In Desha Co., Ark., the second of the large ditches for diverting Cypress Creek (draining a large area) into the Red River, is well under construction. In Lafayette Co., Ark., surveys have been made of two large districts, and plans have been prepared for draining them and protecting against overflow from the Red River. A surprising interest in farm drainage was aroused in Kentucky during the year, and a number of tile systems were laid where this kind of improvement was previously unknown. In those States where cotton is the main crop, the effect of the European War in curtailing the cotton market has retarded drainage progress. Investigations have been started looking to the protection and drainage of 40,000 acres of overflowed land along the Kootenay River from Bonners Ferry, Idaho, to the Canadian line.

The area of irrigated lands injured by seepage and alkali continues to increase. One of the most difficult problems has been encountered in the vicinity of Grand Junction, Colo. The U. S. Department of Agriculture has been conducting investigations there for a number of years, and the results of recent experiments indicate that deep drains supplemented with deep relief wells will permit the reclamation of even the worst places at costs not low but, nevertheless, profitable. The Carmel Drainage District, in the San Luis Valley, Colo., has completed construction work. The United States Reclamation Service is considering the construction of a big outlet drain for the San Luis Valley, to develop water for irrigation farther down the Rio Grande. Plans have been made for a drainage district of several thousand acres near Sterling, Colo. A number of drainage districts have been organized in the Yakima Valley, Wash., in Utah, and New Mexico.

FOREIGN COUNTRIES. The government of British Columbia has passed an act authorizing the Lieutenant-Governor, upon petition from owners desiring to drain, dike, or irrigate their lands, to appoint three commissioners to execute and maintain the improvement works. Under this act has been authorized the drainage of a large overflowed area in the Lillooet River Valley, by lowering Lake Lillooet. The government of British Columbia has made quite detailed studies of the probable works necessary to protect and drain the overflowed lands along the Kootenay River from the International Boundary to Kootenay Lake, just below the proposed district in Idaho.

The Russian government is endeavoring to develop parts of the Caucasus by drainage, flood prevention, and irrigation. Considerable progress had been made by the middle of the year, mostly in Eastern Transcaucasia on the lower parts of the Rivers Arx and Kur. Surveys have been undertaken to plan the drainage of the Mugan swamps for about 80 miles along the New Aras, between Lake Ak-Tchal and the Tcheilsk post. The Austrian government and the Provincial Commission of Vorarlberg have arranged for constructing protective works necessitated by the floods of 1910 and 1912. Temporary works have been placed where the need is most urgent, and $800,000 was appropriated for regulating the Ill River.

In Egypt, on the projects begun in 1912 in the Beherah and Gharbieh districts, excavating has been finished, and most of the bridges and sluices have been placed. The government has awarded a contract for the pumping machinery, costing $900,000, to be erected at Baltim, near Cairo. There will be eight Diesel crude-oil engines, and six steam engines, totaling 6050 horsepower, direct-connected to centrifugal pumps having a capacity for lifting 2,000,000,000 gallons of water in 24 hours against a head of 7 to 13 feet.

India, like the Western United States, finds some irrigated lands become waterlogged and need drainage. Near Amritsar, land under the Bari Doab Canal has been so affected, and works are being constructed to utilize fall in the canal for generating power to pump water from the soil and use it for irrigation. So far as this is successful it will serve the double purpose of draining the wet land, and conserving irrigation water in the canal. For protecting and draining 17,000 square miles of overflowed lands in the Hwai River district of China, $20,000,000 was to be made available by a Chinese government gold loan, secured by all the revenues from the benefited lands. There would be a special conservancy tax on those lands, as well as tolls from the canals. The war in Europe will probably prevent the floating of this loan. In Chosen (Korea), investigations have been started toward leveeing and generally improving several of the large rivers, as the next public work to be undertaken by the government.

The Premier of the Commonwealth of Australia has submitted to the government a bill including $1,000,000 for drainage and other public works.

DRAMA, AMERICAN AND ENGLISH. The theatre season of 1914, in both America and England, was sharply divided into two sections by the outbreak of the war. The first half, though far from brilliant, was fairly normal; but the second half was a period of unprecedented depression. In times of great financial stress, people economize first of all by cutting off their theatre-going. The war practically put a stop to theatrical production in England, and, though the United States was a neutral nation, the patronage of the American theatres was diminished fully fifty per cent. In New York, many of the first-class houses were dark for several weeks at the height of the season. Plays which ordinarily would have run a year were summarily withdrawn. Conditions on the road were even worse; and the most successful metropolitan productions of the preceding season played to less than half the business that was expected of them in the subsidiary cities. In December the Liebler Company collapsed. George C. Tyler, the director of this firm, was honored in both America and England as a manager of fine artistic taste and high ideals; and his enforced retirement was regarded as a great loss to the theatre. A few days later, another manager to whom the public had been indebted for many excellent productions, Harrison Grey Fiske, was driven into bankruptcy.

Under such conditions, it was impossible for a playwright to achieve a mild success. Any play produced after the outbreak of the war had to make an immediate and great impression; otherwise there was no alternative but failure. A good enough play was no longer good enough: something striking and sensational and, if possible, unique had to be invented to catch the public eye and set the people talking. This necessity called forth, in America, a series of plays in which a strong effort was made to capture immediate attention by subverting one or another of the traditional conventions of the drama. From the technical standpoint, the quest for novelty must be recorded as the definitive feature of the year. Some of the new devices invented showed no merit but their unconventionality; but others proved themselves so valuable that they seemed destined to be adopted as permanent additions to the technique of the theatre.

The most successful, and also the most interesting, American play of the year was *On Trial*, by Elmer L. Reizenstein, a new author only twenty-one years old. The story of this melodrama was conventional enough: a husband murdered a man who had seduced his wife many years before, and who recently had reappeared to torture and torment her; but the author imparted a new interest to this old material by telling the story backward. Instead of proceeding from causes to effects, he proceeded from effects to causes; instead of building his plot up, he broke it down. In an interesting melodrama entitled *Under Cover*, which ran in Boston throughout the first half of the year, and simultaneously in New York and Chicago throughout the second half, Roi Cooper Megrue successfully overturned the tradition that a dramatist must never keep a secret from the audience. The play dealt, in a serio-comic mood, with smuggling through the New York customhouse. Until the very end of the last act, the hero was presumed to be a smuggler; then it was suddenly revealed that he was an agent of the secret service whose purpose was to convict the customhouse officials of grafting. A successful farce entitled *It Pays to Advertise*, which was written by the same author in collaboration with Walter Hackett, was made amusing by a continual series of surprises. Time and again, the audience was forced to change its mind about the motives of the characters. An even greater alertness on the part of the audience was demanded by an unusual play, by A. L. Thomas and Clayton Hamilton, which ran for several weeks in Boston under the title of *Wanted: $22,000*, and was subsequently presented in New York under the title of *The Big Idea*. The hero was a young author who found himself in immediate need of a large sum of money to save his family from disgrace and ruin; the heroine persuaded him to write his own circumstances into a play; and, in the last act, the two sold the piece to a theatrical manager for the needed amount of money. Thus, at the same time, the audience saw the hero writing a play, and saw the play that he was writing. In *Innocent*, which was adapted by George Broadhurst from the Hungarian of Arpad Pasztor, the hero killed himself in the prologue, and the play itself, which was set two years before, outlined the circumstances which had culminated in the suicide. The note of novelty was also apparent in another Hungarian play, by Ferenc Molnar, adapted into English by Leo Ditrichstein, and called *The Phantom Rival*. The entire second act depicted a dream of the heroine's in which an old lover appeared to her in various imagined aspects, and talked romantic nonsense. Then, in the last act, the man came back to her in fact, and showed himself less worthy than her dreams of him. Another dream-play, which was presented in England before the outbreak of the war and in America afterward, was *My Lady's Dress*, by Edward Knoblauch. The heroine, having just received a new dress from Bond Street, fell asleep and dreamed her way through a series of seven one-act plays, depicting crucial moments in the lives of various people who, at one time or another, had toiled to manufacture the materials that went into the making of her gown. This play was beautifully produced by Frank Vernon, with a return to the technique of the inner-and-outer stage of the Restoration period. *Too Many Cooks*, by Frank Craven, was also notable for novelty of stage-direction. The hero, who was engaged to be married, was building a house in the suburbs. All three acts were set in the same place; but the first set exhibited the foundations of the house, the second set showed the erection of the framework, and the third set revealed the completed edifice. The influence of the moving-picture play was apparent in *The Battle Cry*, a dramatization of a novel by Charles Neville Buck. Some of the scenes were acted on the stage; and intervening episodes were depicted on a screen by the kinetoscope. A somewhat similar technique was employed in *The Silent Voice*, by Jules Eckert Goodman. The hero was a deaf man, accustomed to lip-reading, who, gazing through field-glasses from the house-top of his mansion on Fifth Avenue, could read the lips of people talking in the park across the way. The incidents which he was supposed to be observing through his glasses were simultaneously revealed upon the stage behind an illuminated transparency. A similar device was invented by Marie Dressler for her production of *A Mix-up*, an otherwise inconsiderable farce by Parker A. Hord. Whenever a character was called up on the telephone, the backdrop became translucent and revealed in pantomime the person speaking at the other end of the wire.

The plays enumerated in the foregoing paragraph were all remarkable for some sort of technical innovation. Some of them were good, and some of them were bad; but, taken together, they represent the eager and somewhat desperate quest of novelty that must be regarded as the definitive feature of the theatre season of 1914, in America and England.

Among the more serious American plays of the year, the following should be recorded. *The Miracle Man*, by George M. Cohan, was dramatized from a novel of the same name by Frank L. Packard. A gang of crooks who had schemed to make money by exploiting the ministrations of an elderly faith-healer in a little town in Maine were converted, against their inclinations, to a better way of life by the sweetness and light that radiated from the patriarch they had intended to victimize. *The Money Makers*, by Charles Klein, exhibited a struggle between a repentant capitalist, who desired to give back his millions to the people he had robbed, and the members of his family, who tried to have him legally declared insane in order to prevent him from giving away his tainted money. A play entitled *The Deadlock*, by Margaret Turnbull, dealing with the Roman Catholic doctrine of marriage, failed during the course of the season because it was based upon religious beliefs with which the theatre-going public was not in sympathy. Another religious play, entitled *Polygamy*, by Harvey O'Higgins and Harriet Ford, attacking the conditions of life in Utah at the present time, had a fair success. *Young Wisdom*, by Rachel Crothers, was a charming and delightful comedy that dealt with the danger of advanced ideas to minds too immature to be able to digest them. Edward Sheldon was represented by two plays during the course of the autumn season, one of them romantic and the other realistic; but both were disappointing to admirers of his talents. *The Garden of Paradise* was a tedious dramatization of *The Little Mermaid* of Hans Christian Andersen; and *The Song of Songs* was a vulgar and chaotic dramatization of *Das Hohe Lied* of Hermann Sudermann.

Attention may now be turned to the lighter American pieces of the year. *A Pair of Sixes*, by Edward Peple, had something of the snap and go of a typical George M. Cohan farce. Two partners, who had always disagreed, decided to settle their differences by dealing a single hand of poker: the winner was to conduct the business for a year, and the loser, meanwhile, was to wait upon his partner as a domestic servant. One partner won the deal with a pair of sixes; but the loser lorded it over his antagonist by creating chaos in the household in which he served as butler. *Twin Beds*, by Salisbury Field and Margaret Mayo, retold the old story of a man who blundered into the wrong apartment and compromised a wife by sleeping innocently in her husband's bed; but this material was handled with unexceptionable delicacy and unusual wit. *The Rule of Three*, by Guy Bolton, satirized the absurdity that arises from the differences between the divorce laws of the various States. *Daddy Long-Legs*, by Jean Webster, which told again the old, old story of a rich and charitable man who fell in love with a little orphan waif, was rendered worth seeing by the stage-direction of Henry Miller and the acting of Ruth Chatterton. *Kitty MacKay*, a worthless play by Catherine Chisolm Cushing, achieved a popular success because it retold the tale of *Cinderella* in terms derived from *Bunty Pulls the Strings*.

La Tosca of Sardou, in various disguises, proved itself once more to be the abiding melodrama of the year. The essential scene of *La Tosca* was repeated in *The Yellow Ticket*, by Michael Morton, in *Panthea*, by Monckton Hoffe, and in *Mr. Wu*, by Harry M. Vernon and Harold Owen. The first piece was set in Russia, the second in Germany, and the third in China; but the motives leading to the climax remained, in every case, the same. The best American melodrama of the year was *Kick In*, by a new author, Willard Mack. It dealt with the difficulties experienced by an ex-convict in endeavoring to reestablish himself in legitimate society. Scarcely less interesting was *The Dummy*, by Harvey O'Higgins and Harriet Ford, a serio-comic melodrama that narrated the adventures of a boy detective. *The Law of the Land*, by George Broadhurst, was an interesting melodrama of the type that hovers within hailing distance of actuality. *Life*, by Thompson Buchanan, was an American imitation of the flagrant type of melodrama made popular at Drury Lane by Cecil Raleigh, who died during the year. It achieved popularity by assembling the greatest possible number of theatrical effects that had proved themselves popular in the melodramas of the past. The same note of extreme conventionality accounts for the success of *Experience*, by George V. Hobart, a modern morality play that was utterly commonplace and unilluminated.

An immediate result of the outbreak of the war was the transference to America of the activities of many English actors, and several English playwrights. Henry Arthur Jones, for instance, delivered three productions in America during the second half of the season. *Mary Goes First* was imported by Marie Tempest as the leading feature of a repertory that included, among other items, a revival of *The Marriage of Kitty; The Goal* was admirably acted, at the Princess Theatre, by Holbrook Blinn; and a new play, called *The Lie*, was presented by Margaret Illington. *The Lie*, though an artificial fabric, was constructed with extraordinary skill; and it deserves to be recorded as the most effective drama composed by Henry Arthur Jones in recent seasons. Early in the year, *The Legend of Leonora*, by Sir James Barrie, was presented in America. This is the same play that had previously been produced in London under the title of *The Adored One*. It was chaotic in structure, and somewhat bewildering in caprice; and it was rendered void by the inefficient acting of Maude Adams. *Pygmalion*, by George Bernard Shaw, after having been produced in Germany and in England, was imported to America with that great actress, Mrs. Patrick Campbell, in the leading part. It was received as a diverting series of intelligent and witty dialogues; but it failed to win consideration as a great example of dramatic art. *Outcast*, by Hubert Henry Davies, the most serious composition of this delicate and dainty artist, was made illustrious by the admirable acting of Elsie Ferguson. *Consequences*, the first work of a 22-year-old dramatist named H. F. Rubinstein, after having been produced by Miss Horniman in Manchester, was successfully presented in London, in New York, and in Chicago. It was a clever satire of the idealism of youth, written brilliantly in emulation of Bernard Shaw. A more conventional satire of the foibles of the British aristocracy, entitled *A Pair of Silk Stockings*, by Cyril Harcourt, was played both in England and in America, and served as a setting for the perfect character-acting of Kenneth Douglas. *Change*, by J. O. Francis, was the play that won the prize offered by Lord Howard de Walden for the best dramatic composition by a Welshman dealing with the life of Wales. The theme of the piece, that crabbed age and youth cannot live together, was traditional; but the characters were rendered with uncustomary truthfulness, and the dialogue suggested at every moment the accent of actuality. But the most popular play of the year, derived from British authorship, was *Grumpy*, by Horace Hodges and T. Wigney Percival. This was merely a conventional melodrama, in the manner of Scribe or the earlier Sardou—a sort of *Scrap of Paper* brought expediently up to date—but it was rendered successful in both America and England by the exquisite character-acting of Cyril Maude.

Lou-Tellegen, who formerly had acted in French with Sarah Bernhardt, made his début as an English-speaking actor in *Maria Rosa*, translated from the Catalan of Angel Guimera, through the Spanish of José Echegaray, by Wallace Gillpatrick and Guido Marburg. This literal representation of the conditions of life among the primordial peasants of Catalonia seemed strange, and new, and powerful. Late in the year, the same gifted actor appeared in a mechanical melodrama by Kate Jordan, entitled *Secret Strings*. The most effective French play that was imported to America during the year was *The Hawk*, by Francis de Croisset. It was well acted by William Faversham, and by Gabrielle Doiziat, who repeated in English the performance that she had given in French in Paris; but the play itself was merely a skillful piece of mechanism, and exhibited little reference to life. *The Beautiful Adventure* was a rather charming sentimental comedy translated from the French of Robert de Flers and Armand de Caillavet. *The Prodigal Husband*, on the other hand, was an incoherent, and consequently ineffective, play by Dario Niccodemi. A *genre*-study by the Belgian authors, Frantz Fonson and Fernand Wicheler, was skillfully localized in Maine by the American novelist, Holman Day. It was called *Along Came Ruth;* and it depicted, with pleasant and ingratiating humor, the resurrection of a sleepy little rural town by an enterprising girl.

Among the scenic productions of the year, the most notable, perhaps, was the investiture contributed by Joseph Urban to *The Garden of Paradise*, a romantic play by Edward Sheldon that has been already noted. Urban's mastery of color and of lighting was also exhibited in the production of *Twelfth Night*, with Phyllis Neilson-Terry in the leading rôle. Less sumptuous, but more subtle and suggestive, were the settings designed by Livingston Platt for the Shakespearian repertory of Margaret Anglin. The production of *A Thousand Years Ago*, by Percy Mackaye, which was staged by J. C. Hoffman in imitation of the manner of Max Reinhardt, was somewhat blatantly inartistic in details, but exhibited a laudable endeavor to reveal to the American public the artistic intention of the newest European methods of production. On the other hand, the panoramic investiture of Richard Walton Tully's play, entitled *Omar, the Tent-Maker*, that was made by Wilfred Buckland, exhibited only a repetition of David Belasco's method of literal transcription from actuality. A dramatic version of *David Copperfield*, by Louis N. Parker, entitled *The Highway of Life*, was exhibited, late in the year, with meticulous attention to the scenery and costumes; but this production failed to interest the public, because the play itself was tedious.

Shakespearian productions were made, during the course of the year, by Sir Johnstone Forbes-Robertson, William Faversham, Margaret Anglin, and Phyllis Neilson-Terry. The most commendable of these were Miss Anglin's presentations of *The Taming of the Shrew*, *As You Like It*, *Twelfth Night*, and *Antony and Cleopatra*, which were marked by a rare zest and *esprit de corps* on the part of every member of the company.

Among the new theatres opened in New York during the course of the year, the most notable were the Punch and Judy, erected by Charles Hopkins, and the Bandbox, inaugurated by Douglas J. Wood. The Punch and Judy Theatre, a little gem of architecture, was opened with an ineffective comedy by Harold Chapin, entitled *The Marriage of Columbine;* and the coöperative company of actors at the Bandbox made their first appearance in a poor performance of *La Mossière* of Jules Lemaitre, translated by Jerome K. Jerome and reëntitled *Poor Little Thing*. The Princess Theatre continued its policy of presenting a composite bill of one-act plays; and one of these, *Across the Border*, by Beulah Marie Dix, which exhibited in poignant terms the moral obliquity of war, provided one of the few undeniable sensations that may be recorded to the credit of the poorest theatre season that New York has known for many years.

PHOTOPLAYS. When moving pictures were first developed into something more than a means of filling in between vaudeville acts, the subjects, though treated with a sequence of action as in the ordinary drama, were such as would appeal to the five and ten cent audiences, supposedly interested in railway wrecks, street fights, highway robberies, daring rescues, etc. The dramatic possibilities involved in the development of this form of entertainment, however, and the great inroads such presentations made on the attendance at the legitimate theatres early forced the managers to secure spoken plays that had already been successful as subjects for the "movies," as well as to have constructed by eminent authors or dramatists a number of others written with the distinct purpose of film representation. While the majority of photoplays, as seen in 1914, exhibited the choice of more serious subjects, and while those of real dramatic quality engaged public attention, yet it was difficult to understand why depicting scenes on the film was more attractive to many audiences than the presentation of them in spoken language. If it was the appeal of realism that causes the film-play to hold its popularity, it would seem that colored moving pictures would be more in vogue, but on the contrary, most experienced managers have abandoned these, where they have tried them. The best representatives of this sort of work were the "Kinemacolor" pictures, and while these were used for a limited number of subjects, they counted for little in the great mass of films shown daily. It must be remembered after all that though a ten-reel film may show a large number of scenes, obvious situations are the only ones that really can convey any message, and it was a growing opinion that, as the public grows more critical, the film drama had to comprise frank and striking appeals, depicting, for example, stories of war, adventure, exploration, acts of daring, etc., leaving the spoken play to occupy its natural sphere of the presentation of action with the assistance and amplification that can only be secured by the spoken word.

Neither pains nor expense were spared to secure not only the best technical work in the photography and setting of photoplays, but the best stage talent was gradually enlisted, with, in many cases, conspicuous success. It must be noted in passing, however, that not every successful actor is equally successful before the camera, and instances might be mentioned where an attempt to transfer the leading "success" to the films has resulted in unsatisfactory effects, due often to the failure of the actors to realize photoplay conditions. A great variety of plays, however, were photographed and presented with varying degrees of success.

In order to make the subject of the photoplay as well as the cast of characters familiar to an "audience," it is usual, after announcing the subject of the play, to throw on the screen the cast of characters, and follow this by a series of pictures representing each actor and actress in some characteristic pose, and give a short résumé of the events to follow. In many cases special incidental music was composed, adapted to the subject of the play, which assisted to a marked degree in the effect produced. It would be impossible in a limited space to recount the important plays that have been shown as photo dramas during the last two years, but the following, which had a special vogue in 1914, may be mentioned:

Quo Vadis; Last Days of Pompeii; Soldiers of Fortune; Seats of the Mighty; Tess of the D'Urbervilles, with Mrs. Fisk; *The Lion and the Mouse; Paid in Full;* and *Third Degree;* Madame Bernhardt in *Camille*, and in *Queen Elizabeth; Arizona; Prisoner of Zenda; Clothes;* and quite recently, *Cabiria*, of which the scenario was specially written by Gabrielle d'Annunzio; *Les Misérables;* and *The Rose of the Rancho*. These all required great expense in assembling the companies, transporting them to the various localities where the scenes were laid, or to corresponding surroundings, and an immense amount of rehearsal and incidental supervision, to bring them up to the standard necessary for exhibition to a public having an increasingly critical disposition.

DRAMA IN EUROPE. See FRENCH, GERMAN, ITALIAN, and SCANDINAVIAN LITERATURE.

DRAPER, EBEN SUMNER. An American manufacturer and public official, died April 9, 1914. He was born in Hopedale, Mass., in 1858, and was educated at a private school and at the Massachusetts Institute of Technology. He carried on his studies while working in machine shops and cotton mills. In 1880 he was admitted to the firm of George Draper and Sons, and when 16 years later the Draper Company was founded, he became its selling agent. In 1892 he served as chairman of the Republican State Convention, and in 1896 headed the Massachusetts delegation to the Republican National Convention, at which he assisted in securing the "gold standard" resolution. He was a presidential elector in 1900. In 1906, 1907, and 1908 he served as Lieutenant-Governor of Massachusetts, and was elected Governor for two terms, 1909–10, and 1910–11. He was a director and officer of many important financial institutions and was a member of several patriotic societies.

DREADNOUGHT. See BATTLESHIPS.

DRESDEN. See NAVAL PROGRESS.

DRIVER, SAMUEL ROLLES. An English theologian and educator, died Feb. 26, 1914. He was born in Southampton in 1846, and was educated at Winchester and New College, Cambridge. At the university he had a distinguished career and on his graduation received the fellowship. From 1875 to 1883 he was a tutor of New College, and from 1876 to 1884 was a member of the Old Testament Revision Company. He held a foremost place among Old Testament scholars in England, and his researches in Hebrew scholarship led to results of the first importance. In 1883 he was chosen Regius professor of Hebrew and canon of Christ Church, Oxford, succeeding Dr. Pusey, who had held the chair for more than half a century. He published many valuable works dealing with Old Testament criticism, the most widely-known of which is the *Introduction to the Literature of the Old Testament*, first published in 1891 and followed by several editions. His other publications include: *Isaiah: His Life and Times* (1893); *Jeremiah* (a revised translation, with introductions and brief explanations, 1906); *Modern Research as Illustrating the Bible* (1909). He was joint editor of the *Holy Bible*, with various renderings and readings from the best authorities (1898), and joint author of *A Hebrew and English Lexicon of the Old Testament* (1906); and of *Four Papers on the Higher Criticism* (1912). He received honorary degrees from Dublin, Glasgow, Aberdeen, and Cambridge Universities.

DRUG HABIT. See COCAINE AND OPIUM HABIT.

DRY DOCK. See DOCKS.

DUNCAN, ROBERT KENNEDY. An American chemist and writer, died Feb. 18, 1914. He was born at Brantford, Ontario, in 1868, and graduated from the University of Toronto in 1892. In the same year he became a fellow in chemistry at Clark University, remaining there one year. He was instructor in physics and chemistry in several private schools until 1901, when he became professor of chemistry at Washington and Lee University. This chair he held until 1906, when he was appointed professor of industrial chemistry at the University of Kansas. In 1910 he became director of industrial research and professor of industrial chemistry at the University of Pittsburgh. He was visiting lecturer at Clark University in 1911. Dr. Duncan was the discoverer and patentee of a new process of manufacturing phosphorus, and of a new low-melting glass, and of a process of decorating glass. In 1907 he instituted at the University of Kansas a new scheme of industrial fellowships which grew to remarkable proportions at the University of Kansas and the University of Pittsburgh. He contributed many articles on industrial chemistry to periodicals and magazines. He was the author of: *The New Knowledge* (1905); *The Chemistry of Commerce* (1907); *Some Chemical Problems of To-day* (1911). He also edited the *New Science Series*, and contributed to scientific and popular magazines.

DUNKARDS, or **DUNKERS.** See BRETHREN, CHURCH OF THE.

DUNLAP, ANDREW. A rear admiral (retired) of the United States Navy, died April 11, 1914. He was born in Ovid, N. Y., in 1844, and graduated from the United States Naval Academy in 1867. In the same year he received appointment as a midshipman and served in the European and Pacific stations. He was promoted to be master in 1870, lieutenant-commander in 1891, commander in 1898, captain in 1902, and rear admiral (retired) in 1905. He served on various sea and shore duties, and in 1896–97 commanded the Coast and Geodetic Survey steamer *Blake*. During the Spanish-American War he commanded the ambulance and hospital ship *Solace*. From 1900 to 1902 he was light-house inspector of the 10th District, and commandant at the naval station at San Juan, Porto Rico, from 1902 to 1906. He was a member of several patriotic societies.

DURNING-LAWRENCE, SIR EDWIN. An English writer and Member of Parliament, died April 21, 1914. He was born in London in 1837, and was educated at University College School and University College, London. In 1867 he became a barrister and two years previous to this he had been elected Member of Parliament as a Liberal Unionist. He continued in Parliament until 1906. His writings include: *History of Lighting from the Earliest Times; The Progress of a Century, or the Age of Iron and Steam; Bacon is Shakespeare* and *The Shakespeare Myth* (1910).

DUTCH EAST INDIES. Certain colonial possessions of the Netherlands, lying between Australia and the Asiatic continent. The capital is Batavia.

AREA AND POPULATION. The Dutch East Indies are composed of two main divisions—(1) Java (16 residencies) and Madoera (1 residency); and (2) the outposts (17 provinces). In the table below are given the area and population (approximate for the outposts) of Java, Madoera, and the outpost provinces, according to the census of 1905:

	Sq. Miles	*Population*
Java	48,686	28,604,719
Madoera	2,090	1,498,289
Outposts		
Island of Sumatra:		
Sumatra, West Coast	31,788	....
Padang Highlands	......	408,481
Padang Lowlands	......	905,040
Tapanoeli	......	418,301
Benkoelen	9,437	204,269
Lampong Districts	11,338	158,518
Palembang	53,718	796,354
Sumatra, East Coast	35,481	568,417
Atjeh	20,550	582,175
Riouw*	16,379	112,216
Banka	4,473	115,189
Billiton	1,869	36,858
Borneo, West District	56,061	450,929
Borneo, South & East Dists.	157,587	782,726
Island of Celebes.†		
Celebes	49,600	415,499
Menado	22,177	436,406
Amboina †	19,870	299,004
Ternate †	176,598	370,902
Timor	17,782	308,600
Bali and Lombok	4,068	523,585
Total	739,547	37,981,377

*Consists of Indragiri in Sumatra and the Riouw and Lingga archipelagoes.

† Included in Ternate are a part of eastern Celebes Island, Dutch New Guinea, and a part of the Moluccas; the rest of the Moluccas are in Amboina. Dutch New Guinea extends to 141° E., with estimated area, 152,428 square miles, and estimated population, 262,000.

The foregoing population figures are for the most part necessarily approximations, and the population of several unexplored regions is not included; the figures for Java and Madoera, however, may be regarded as accurate. Eurasians and persons of pure European blood numbered 80,910, mostly Dutch, and mostly born in the East Indies; Chinese, 563,449; Arabs, 29,588; other Orientals, 22,970. The total native population (exclusive of New Guinea) numbered 37,020,460, of whom 29,715,908 were in Java and Madoera. The Dutch maintain religious liberty. In 1905 there were among the natives and Orientals about 460,000 Christians. For the education of Europeans and Eurasians there are public elementary and middle-class schools, as well as private schools.

PRODUCTION, COMMERCE, ETC. The principal products are sugar, coffee, cinchona, tobacco, tea, indigo, tin, coal, salt, gums, bark, and spices. The total area planted to rice in 1912 was 3,342,084 bahoes (1 bahoe = 1¾ acres), with an approximate production of 85,514,914 piculs; sugar cane, 281,994 bahoes, 21,562,047 piculs; tobacco, 262,736 bahoes; indigo, 14,583 bahoes; other sown crops, 3,704,660 bahoes. In Java the government coffee plantations covered, in 1912, 59,526 bahoes, producing 81,000 piculs; production from emphyteutic plantations, 272,000 piculs, and from private estates, 29,000 piculs. Production of tea in Java, 29,415,704 kilos; cacao, 2,272,953 kilos.

Government mines at Banka yielded 250,496 piculs of tin in 1911–12; private mines at Billiton and Riouw, 76,914. Coal output, 1912, 408,204 tons; 1913, 411,083 tons. Output of petroleum, 1911, 17,147,650 hectoliters.

Government trade and private trade, merchandise and specie, are given in the table below for three years, in florins:

Imports	*1910*	*1911*	*1912*
Government:			
Mdse.	10,014,468	13,010,500	20,229,755
Specie	2,640,000	730,000	5,170,000
Private:			
Mdse.	315,331,656	360,297,773	380,669,597
Specie	17,308,688	25,978,552	29,553,007
Total	345,294,802	400,016,825	435,622,359
Exports			
Government:			
Mdse.	29,461,209	34,105,488	51,411,500
Specie	....	....	609,072
Private:			
Mdse.	422,084,962	476,507,822	533,617,014
Specie	1,051,660	362,989	1,410,614
Total	452,597,831	510,975,794	587,048,200

In thousands of florins are given the values of the principal exports in 1912 (the latest available figures), as follows: Sugar, 134,630; tobacco 97,088; tin 52,554; copra 49,491; coffee 30,726; petroleum 24,196; tea 23,334; skins 7585; rice 7547; pepper 7158; rattan 5811; gums 5682; quinine 3707; rubber 2824; and nutmeg 1505.

In the merchant marine in 1912 were included 204 steamers of 329,009 cubic meters capacity, and 4994 sailing vessels, of 141,462 cubic meters capacity—a total of 5198 vessels, of 470,471 cubic meters, against 9610, of 591,578 cubic meters in 1911, and 12,669, of 621,292 cubic meters in 1910. There entered at the ports in the 1911 trade, 6484 steamers, of 4,454,546 tons, and 35 sail, of 26,196 tons. There were reported at the end of 1911, 1602 miles of State and private railways, 10,902 miles of telegraph lines with 574 stations; post offices, 364.

FINANCE AND GOVERNMENT. Revenue and expenditure for three years are shown in the table below, in florins:

	1912	*1913*	*1914*
Revenue	267,647,706	273,608,208	256,957,128
Expenditure ..	266,412,111	313,096,644	335,050,688

The colony is administered by a Governor-General—A. W. F. Idenburg in 1914 (appointed Aug. 20, 1909).

ARMY. The Dutch colonial forces consist of 29 battalions of infantry, and 4 depot battalions, 4 squadrons of cavalry, 4 field batteries, 4 mountain batteries, 15 fortress companies of artillery, and 5 engineer companies. The army is mixed, in most battalions 1 European company to 3 companies of natives, though the latter are officered by Europeans, and have in part European noncommissioned officers, while the artillery has European gunners. In 1913 there were 1306 officers, and 33,403 men, of whom 11,745 were Europeans, in the colonial army, and a small reserve formed of both Europeans and natives.

DUTCH GUIANA (SURINAM). A colony of the Netherlands (between 46,000 and 49,000 square miles) on the northern coast of South America. The population, exclusive of negroes in the interior, totaled 84,882 in 1912. The capital is Paramaribo, with 34,459 inhabitants. The sugar production in 1912 was 9,634,400 kilos; molasses, 197,100 liters; rum, 989,900 liters; cacao, 864,000 kilos; coffee, 196,900 kilos; corn, 1,290,600 kilos; rice, 2,659,300 kilos; bananas, 256,500 bunches. The country contained (1912) 7218 cattle, 263 horses, 176 mules, 593 asses, 107 sheep, 2812 goats, and 3618 swine. The gold production in 1912 was 743,199 grams, valued at 1,018,183 florins (1,081,476 grams, 1,481,622 florins in 1910; 955,148 grams, 1,308,553 florins in 1911); gold export in 1912, 716,488 grams, valued at 981,588 florins (1,055,528 grams, 1,446,073 florins in 1910; 928,056 grams, 1,271,437 florins in 1911). Total imports in 1912, 7,494,063 florins; exports, 6,619,937 (8,273,590 and 9,201,669 in 1911). Vessels entered in the 1912 trade, 238, of 211,214 tons. Estimated revenue, 1914, 6,262,000 florins; expenditure, 7,052,000; 6,425,000 and 7,294,000 florins in 1913; 6,105,000 and 4,414,000 in 1912. Subvention, 1914, 790,000 florins. The Governor in 1914 was W. D. H. (Baron) van Asbeck.

DUTCH REFORMED CHURCH. See REFORMED CHURCH IN AMERICA.

DUTCH WEST INDIES. See CURAÇAO and DUTCH GUIANA.

DYNAMO-ELECTRIC MACHINERY. In the design and construction of motors and generators there were no epoch-making events during the year to record, although very large dynamos continued to be built in increasing numbers. The installation of the 35,000 kilowatts turbo-generating set of the Philadelphia Electric Company, referred to in the 1913 YEAR BOOK, was completed in 1914. This generator was designed to run at 1200 revolutions per minute, and deliver 60-cycle, three-phase energy at 13,200 volts. For the excitation of this machine a 150 kilowatts shunt-wound generator was mounted on the same shaft furnishing current at 250 volts. A novel feature of the construction of the main alternator was the provision for observing, at all times, the temperature in different portions of the windings. Thermoelectric couples were inserted at the ends of the coils, in the bottom of the slots of the armature, and at various other parts of the machine where the rise in temperature under load could be under the observation of the station attendant. This was probably the first instance of the use of this method in commercial work. As this turbo-generating unit was installed chiefly for the purpose of supplying energy to the Pennsylvania Railroad, the latter was building, at the close of the year, a substation near the main station of the Philadelphia Electric Company, containing machinery for converting and distributing energy for use on the lines that were in process of being electrified to Paoli and to Chestnut Hill. (See ELECTRIC RAILWAYS.)

In New York, three 30,000-kilowatt turbo-generating units referred to in the 1913 YEAR BOOK were installed by the Interborough Rapid Transit Company. At Chicago, tests made on the two 25,000-kilowatt turbo-generator units at the Fisk Street Station, one an English and the other an American machine installed during the year, showed unusually high electrical efficiency with a corresponding reduction in the fixed charges per kilowatt. The construction of large synchronous rotary converters for use in substations was continued, and several of a capacity as great as 4000 kilowatts were installed for heavy railway work.

An unusual arrangement, comprising the employment of a synchronous motor for controlling the voltage and the power-factor of a long high tension line, was exemplified on the 240-mile transmission line of the Big Creek Power System in California. The machine, which constituted a large synchronous condenser, was located at the receiving end of the line, controlling the voltage and power-factor through its variable degree of excitation. This plan was not regarded by engineers as in all cases justified, but for so important a line the expense, though high as compared with the installation of inductive reactances, was considered warranted by the superior regulation secured. This use of a synchronous motor at the receiving end of a transmission line was used elsewhere to a limited extent, and for many purposes, such as pumps and compressors, the synchronous motor appeared to be used in increasing numbers. For most industrial purposes, however, the induction motor was the type most generally employed. In the construction of motors a notable event was the use of the so-called split-phase principle for alternating current railway motors, and at the close of the year the Westinghouse Company had built and was testing on the Norfolk and Western Railway several locomotives designed for heavy coal traffic on steep grades. These locomotives were equipped with four induction motors, designed to develop 1300 horsepower at 14 miles per hour. See ELECTRIC RAILWAYS.

DYSENTERY. Nixon, of San Antonio, Texas, called attention to the value of *chaparro amargosa* in the treatment of amebic dysentery. At present the best known treatment is by emetin, an alkaloid of ipecac, which drug was used in its crude form for many years by the English surgeons in the East. *Chaparro amargosa* is a small thorny bush 2 or 3 feet high, indigenous to south Texas and Northern Mexico. Its name was given it by the Mexicans and means "bitter bush." Botanically, it belongs to the order of *Simarubaceæ;* classed as *Castela nicholsoni.* It was said that General Taylor's soldiers learned its use during the Mexican War, and at various times since then attempts have been made to bring the remedy before the medical profession, but it apparently never attained more than a local reputation. Nixon states that the use of *chaparro* results in rapid cure. He used the drug in infusion both by mouth and rectal enema. Patients who have been ill for months were cured at the end of a week. The ameba disappears from the intestinal tract sometimes in 48 hours after the beginning of the treatment.

EARTHQUAKES. The year 1914 was not extraordinary for the number or magnitude of the individual earthquakes that were added to the record. There were few destructive shocks and none of them probably could be classed as of the first magnitude, certainly none occurring within the more populous regions. The Mediterranean area, as in the few preceding years, seemed to be in a state of seismic unrest, with principal centres of disturbance in Sicily, not far from the scene of the Messina catastrophe, and in Western Greece and the Ionian Islands. The severest shock in Sicily was felt on the evening of May 9, and affected a zone extending along the southern slopes of Mt. Etna as far south as Catania. It inflicted loss upon the communities of Acireale, Bongiardo, Linera, and Santa Venerina, the dead numbering over 100. Linera, a village of 800 inhabitants, was totally wrecked. Catania was severely shaken, but escaped any great damage. Several heavy shocks were reported in Japan, where the outburst of Sakura-jima, a volcano on the small island of Sakura near Kagoshima, was the cause of considerable devastation, with attendant earthquakes. The latter precipitated a slide of rock in the vicinity of Kagoshima which overwhelmed many of the people. The principal disturbance in the eastern Mediterranean occurred on November 27, when the Ionian Islands and the adjacent mainland experienced a heavy shock; it was centred near the island of Santa Maura where the movement caused landslips and other physical changes of the surface, besides involving some loss of life.

The occurrence of slight but plainly sensible tremors over the northeastern part of the United States and Southern Canada aroused much interest and some alarm among the people of that section. The shock took place soon after 1:30 P.M. (Eastern time), February 10, and consisted of several oscillatory movements lasting altogether from 10 to 20 seconds. It seems to have had its greatest energy in central and northern New York and the section of Canada bordering Lake Ontario and the upper St. Lawrence. It was also felt in central New England, in northern New Jersey, and as far west as Chicago. There was no attendant damage to speak of, although in some places the buildings rocked so as to precipitate articles that were delicately balanced, to crack plaster, and cause slight sounds. The effects were most apparent where the buildings rested upon earth, those on rock foundations being scarcely disturbed, as usually happens. No doubt exists as to its being a true tectonic shock, caused by some slip or adjustment of the rock structure below the surface, of the same essential nature as the very powerful earthquakes. The section of country over which it extended is only rarely visited by seismic disturbances perceptible to the senses. The rocks belong to the older formations which have undergone no great displacement from tectonic sources since the Appalachian uplift at the close of Paleozoic time. They have had, thus, a long time in which to reach a state of equilibrium. Nevertheless, it is known that they are traversed here and there by faults which mark lines of weakness and along which any accumulations of crustal strain may find relief. One of these lines of weakness, known as Logan's fault from the Canadian geologist of that name, has a north and south trend along the lower St. Lawrence and the Green and Taconic mountain ranges. From the general features of the recent disturbance it appears not unlikely that the source lay within this fault or some of its branches.

EARTH'S RIGIDITY. See GEOLOGY.

EAST AFRICA PROTECTORATE. The territory lying between the Umba and Juba Rivers, from German East Africa to Italian Somaliland and Abyssinia, and extending inland to Uganda; a British dependency. Besides seven provinces and a semiorganized northwestern tract, it includes certain coastal territories leased from the Sultan of Zanzibar, extending 10 miles inland from the German frontier to Kipini. The lease also includes the Lamu Archipelago and an area of 10 miles around the fort of Kiskayu. The original concession was made to the Imperial British East Africa Company, but was transferred in 1895 to the Imperial government; on April 1, 1905, it was transferred from the Foreign Office to the Colonial Office; on Nov. 9, 1906, by an order in council, the protectorate was placed under a governor and commander-in-chief. Total estimated area, 200,000 square miles, with a population estimated at 4,000,000. The administrative districts returned in 1910 a population of 2,295,336. Arabs and Swahilis predominate along the coast; in the interior are the Masai, Somalis, Gallas, and various Bantu tribes. Paganism prevails except along the coast, where Mohammedanism has made progress. Nairobi is the capital and the central station on the Uganda Railway. It has about 14,000 inhabitants, and Mombasa, the largest town and chief port, has about 30,000. Kilindini, with its magnificent harbor, will be the centre of distribution for the equatorial African trade when certain projected improvements have been completed.

The distribution of agricultural lands in 1912 was as follows: 9844 acres freehold, 328,189 lease; of this total (338,033 acres), 27,888 were devoted to agriculture and 310,145 to grazing. Experiments are on foot looking to a large extension of cotton cultivation. Potatoes, fruits, and vegetables are exported from the highlands; cereals and coffee have an increased cultivation. Cattle, sheep, and ostriches graze the uplands. Rubber, gum-copal, and timber are brought from the forests, and sisal and rubber are being extensively planted. Iron, graphite, limestone, gold, and carbonate of soda are known to exist; opals are mined. In 1912–13, the imports were valued at £1,808,343, against £1,330,437 in 1911–12; exports, £1,203,201, against £1,016,898 in 1911–12. Customs receipts, 1912–13, £146,085, against £101,088 in 1911–12. The United Kingdom received imports valued at £722,147, and dispatched exports to the amount of £490,534. Tonnage entered and cleared, 1912–13, 1,635,640, against 1,563,659 in 1911–12.

The Uganda (Mombasa-Victoria) Railway is operated as a State line by the East Africa Protectorate. The average mileage operated in the fiscal year ending March 31, 1914, was 602 as against 586 in the previous year. The steamers on the lake are also worked in connection with the railway. Telegraph lines, 2284 miles, exclusive of the lines in Uganda. Revenue and expenditure for 1912–13 were £952,525 and £961,178 respectively, against £729,078 and £772,354 in 1911–12. The Governor in 1914 was Sir H. C. Belfield (appointed in 1912).

ECONOMIC ASSOCIATION, American. The twenty-seventh annual meeting of the Association was held in Princeton, N. J., from Dec. 28 to 31, 1914. The American Statistical Association and the American Sociological Society also held meetings at the same time and place. Among the speeches and papers were the following: "Speculation on the Stock Exchange and Public Regulation of the Exchanges," "Market Distribution," and "The Relation of Education to Industrial Efficiency." Joint meetings were held with the American Statistical Association and the American Sociology Society. Papers were read or subjects were discussed at the meeting by: Samuel Untermeyer, Dr. Henry C. Emery of Yale University, Royal Meeker, United States Commissioner of Labor Statistics, Dr. Edward D. Jones of the University of Michigan, and Frank H. Dickson of Dartmouth College. The officers of the Association are Prof. John H. Gray of the University of Minnesota, president, and Allyn A. Young of Cornell University, secretary. The Association was organized in 1885 and has about 2500 members. See also section so entitled, under Political Economy.

ECONOMIC GEOLOGY. See Geology.

ECONOMICS, Social. See Social Economics.

ECUADOR. A South American republic on the Pacific coast between Colombia and Peru. The capital is Quito.

Area and Population. The eastern limits of the country are not definitely established, but, pending a settlement of the boundary disputes with Colombia and Peru, the area of Ecuador is stated at 299,600 square kilometers (115,676 square miles); including the Galápagos Islands, 307,243 square kilometers (118,627 square miles). The population is estimated at 1,500,000. The Galápagos Islands are reported to have about 400 inhabitants. The majority of the people are Indians, and there are perhaps 400,000 mestizos; the proportion of pure white inhabitants is very small. Much uncertainty exists in respect of urban populations; estimates, which are hardly to be regarded as better than mere guesses, are: Guayaquil, 80,000; Quito, 70,000; Cuenca, 40,000; Ríobamba, 18,000; Latacunga, 18,000; Ambato, Ibarra, Loja, and Puertoviejo, each 10,000.

Education. Primary instruction is free and nominally compulsory, but illiteracy is prevalent. According to the presidential message of Aug. 10, 1912, the total number of public, municipal, and private schools was 1590, with 2326 teachers and 98,413 pupils. The 1913 message reported the public schools at 1266, with an enrollment of 65,531. For secondary education, the government supports 12 institutes, which in 1912 had a total average attendance of only 1228. For higher and professional education, there are the Central University at Quito, the University of Guayas at Guayaquil, and the University of Azuay at Cuenca; there are also commercial and technical schools at Quito and Guayaquil, and a law college at Loja. The State religion is Roman Catholicism.

Production and Commerce. The products of Ecuador include cacao, coffee, rice, sugar cane, tobacco, vegetable ivory, and rubber. Cotton cultivation has become almost negligible, and the rubber industry has suffered from the thriftless exploitation of the trees. By far the most important crop is cacao, for which Ecuador supplies a large part of the world's demand, though the proportion is smaller than formerly; the average Ecuadorean output has not declined, but that of other countries, notably Brazil, has in recent years increased. During 1913 cacao to the amount of 85,908,495 pounds was delivered at the port of Guayaquil from the producing districts, as compared with 72,892,014 pounds in 1912. The quantity delivered at other ports of the country is comparatively small. Ecuador has valuable mineral resources, but they have been largely exploited. Aside from Panama hats, which are produced in large numbers, manufactures have little commercial importance.

Imports and exports have been valued as follows, in thousands of sucres:

	1907	*1908*	*1909*	*1910*	*1911*	*1912*
Imports:						
Mdse.	....	18,692	16,959	14,418	21,990	......
Specie	....	1,862	1,746	2,064	1,650	......
Total	..19,670	20,554	18,705	16,477	23,640	......
Exports:						
Dom.*	......	23,727	23,977	27,292	26,072	25,430
Reëx.†	......	2,833	902	770	44	2,738
Total	..22,907	26,560	24,879	28,062	26,116	28,168

* Domestic exports, i.e., exports of Ecuadorean produce.

† Reëxports.

Principal classified imports in 1911, in thousands of sucres: textiles, 6663; foodstuffs, 3445; hardware, 1480; machinery, 1387; ready-made clothing, 824; wines, liquors, etc., 705; drugs, etc., 658; arms, ammunition, etc., 584; mineral products, 460; cordage, etc., 440; leather, 344; paper, etc., 308. Principal domestic exports in 1911 and 1912 respectively, in thousands of sucres: cacao, 16,095 and 15,716; Panama hats, 2890 and 2817; vegetable ivory, 1804 and 1923; coffee, 2281 and 1609; rubber, 1433 and 1435; gold, 525,428 and 629,418; cattle hides, 409 and 606.

Communications. The total length of railway in operation in 1912 was about 370 miles; of this, 297 miles are comprised in the Guayaquil-Quito line, which was completed June 25, 1908. A short line (only 19 miles) runs from Puerto Bolívar to Machala, Pasaje, and Guabo. A line from Bahía de Caraquez to Quito has been under construction since July, 1909, and one from Manta, on the coast, to Santa Ana since July, 1910. Construction has been begun also on lines from Ambato to Curarray and Huigra to Cuenca. At the end of 1912, there were 3318 miles of telegraph line, with 188 offices. Post offices, 151.

Finance. The standard of value is gold. The monetary unit is the sucre, par value 48.665 cents (one-tenth of the Ecuadorean condor or of the British sovereign). Revenue and expenditure have been as follows, in thousands of sucres; the figures for 1913 and 1914 are estimates:

	1910	*1911*	*1912*	*1913*	*1914*
Revenue ...	15,117	18,264	19,978	20,887	20,760
Expenditure	15,479	15,886	19,950	20,887	20,760

The principal items of revenue are import duties and export duties, the former amounting in 1912 to 8,155,620 sucres and the latter to 4,598,408 sucres. The larger disbursements in 1912 were: for the public debt, 6,927,348 sucres; war and marine, 3,411,810; public instruction, 1,844,696; interior and police, 1,581,325; finances, 1,080,069; public works, 1,003,255. Public debt, Jan. 1, 1913: foreign, 32,217,450 sucres; internal, 12,579,480.

Army. There is a regular army recruited nominally by compulsory service between the ages of 18 to 32 and a national guard of citizens from 32 to 45. The army has an establishment of 7810 officers and men, being made up of 13 battalions of infantry, 1 regiment of cavalry, 12 batteries of artillery and some technical and departmental troops. The recruits serve one year then pass to the reserve and the second line which has a theoretical organization of 135 infantry battalions, 7 regiments of artillery, and 44 squadrons of cavalry.

Navy. The navy consists of a small cruiser (*Cotopaxi*, 736 tons), a torpedo-boat destroyer (*Bolívar*, 1000 tons), a torpedo boat (*Tarqui*, 56 tons); three launches, and an auxiliary vessel. Personnel, about 200 men.

Government. Under the constitution, the executive authority is vested in a president elected for four years by direct vote. He is assisted by a cabinet of five ministers. There is no vice-president. The legislative power devolves upon a congress of two houses, the Senate (32 members, elected for four years), and the Chamber of Deputies (48 members, elected for two years). For the term beginning Aug. 31, 1911, Emilio Estrada was inaugurated President in succession to Gen. Eloy Alfaro. Estrada died Dec. 21, 1911, and, in accordance with the constitution, was succeeded by the president of the Senate, Carlos Freile Zaldumbide, as acting President. There followed a revolutionary outbreak, headed apparently by friends of General Alfaro (who was killed). The president of the Chamber of Deputies, Francisco Andrade Marín, succeeded to the position of acting President. On March 31, 1912, Gen. Leonidas Plaza, who was commander of the government forces, and who had been President in 1901–5, was elected President, and on the 31st of the following August was inaugurated for a four-year term.

History. At the beginning of the year the government forces made several attempts to capture the port of Esmeraldas, which had been held since the middle of December, 1913, by the rebel leader, Col. Carlos Concha. Colonel Concha, it will be recalled, was a Liberal, as was also President Plaza, but the former belonged to the Alfarista faction of Liberals who resented the coup by which General Plaza had superseded President Alfaro in 1912. In February, 1914, the government ordered the entire navy to coöperate with the land forces in the operations against Esmeraldas. The combined attack achieved a momentary success, but the city again fell into the hands of the rebels and was in great part given over to flames. In March the menace of superior forces caused Colonel Concha to withdraw from Esmeraldas. President Plaza entered the city in triumph. But in April Esmeraldas was once again besieged, and the Federals lost 500 killed and wounded and 200 captured. In April it was further reported that the revolution had collapsed when two of its leaders—Andrade and Pacquel—were captured. Nevertheless, in August the government found it necessary to send fresh troops to the coast province of Manabi, south of Esmeraldas, to cope with renewed revolutionary disturbances. On August 10 the Congress met at Quito and elected Agustín Cabezas as president of the House of Representatives, and Alfredo Bacquerizo Moreno as president of the Senate. See also International Arbitration and Peace, *Bryan-Wilson Treaties*.

EDISON FIRE. See Fire Protection.

EDUCATION. See section so entitled under various foreign countries.

EDUCATION, Vocational. See Education in the United States.

EDUCATION IN THE UNITED STATES. Statistics. *Attendance in Elementary Schools.* According to the latest report of the United States Commissioner of Education covering the school year 1911–12 there were 17,077,577 pupils in public, and 1,505,637 pupils in private elementary schools. About 73 per cent of this number were in daily attendance for a period that averaged 158 days. More than 91 per cent of all pupils and students attending educational institutions are in the elementary schools. This is 19 per cent of our total population, and 72.25 per cent of all persons from 5 to 18 years of age. Within the elementary school, 23 per cent of the pupils are attending the first grade, while on the average, only about 6 per cent reach the eighth or last grade. There were in the Southern States, where all schools for negro children are separate from the white schools, a total of 1,769,859 colored pupils. It is noteworthy that while the enrollment of white children in the common schools of these States has increased 28 per cent since 1900, the enrollment of negro children increased only 13 per cent. This relative increase of colored pupils enrolled in the public schools was less than the per cent of increase of colored population in those States for the same period. A smaller proportion of negro children from 5 to 18 years are now enrolled in the public schools than were enrolled in 1900.

Teachers in Elementary Schools. In 1912 a total of 495,436 teachers were employed in the public elementary schools, of which number, 91,636, or 18.5 per cent, were men. The proportion of men teachers is less than one-half what it was in 1880. The relative number of men teachers in elementary schools in the United States is less than is found in similar schools in any of the important European countries for which data are available. Austria employs about 66 per cent men, Switzerland 60, Germany 53, Belgium 44, France 42, and England and Wales 33.

Attendance in High Schools and Academies. For the school year 1912–13 there were 1,134,771 students in public, and 148,238 students in private secondary schools, of which number 22,710 were colored students. There were 57,349 secondary students in the preparatory departments of colleges and universities, and probably at least 50,000 more were enrolled in preparatory departments of other higher institutions. More than 64 per cent of all the secondary students in private schools were in denominational institutions. The Roman Catholics led with 45,303 students; the Baptists had 10,159; the Episcopalians, 6,985; the Mormons, 5,991; the Methodists, 5,621; the Presbyterians, 4,431; the Methodist Episcopal South, 4,029; the Lutherans, 3,311; the Friends, 2,852; the Congregationalists, 2,250; and all other denominations, 5,788 students.

It is estimated that about 41 out of each 100 high school students are in the first year of the course, and that only 13 per cent reach the fourth or last year. In June, 1913, 167,117 boys and girls were graduated from high schools. Of this number, 59,975 had prepared for college, and 25,886 for other higher institutions.

Prior to 1888 the private high schools and academies enrolled more students than the public secondary schools. From that date the proportion of students in the private institutions decreased until it reached its lowest point, 10.02 per cent in 1908–09. Since then the number of students in the private high schools has increased nearly 60 per cent, while the increase in public high schools has been less than 35 per cent.

Teachers in Secondary Schools. The public high schools employed 23,412 men and 30,326 women teachers, this being an average of one teacher to every 21 pupils enrolled. The corresponding figures for the private schools were 5,656 men, 7,698 women, and an average of 11 students to each teacher.

Kindergarten Attendance. In 1912 there were 6,371 public kindergartens with 311,970 children. There were also 994 kindergartens other than public, with 52,219 children enrolled. In 1902 there were 3,244 kindergartens with 205,432 children; equivalent to enrolling 5 per cent of the children 4–6 years, the usual kindergarten age. In 1912, 9 per cent of the children of kindergarten age were attending.

Attendance in Parochial Schools. The 1913 Report of the United States Commissioner of Education contains a chapter on Roman Catholic Parochial schools by Rev. Patrick J. McCormick. The number of schools for 1913 were 5,256, and the pupils enrolled, 1,360,761. There has been an increase of about 27 per cent in schools and 40 per cent in number of pupils since 1900. It is estimated that the total expenditures for these parochial schools in 1912–13 was $10,886,088, or an average of a little more than $8 per pupil. Professor McCormick estimates that were these children to attend the public schools, the cost to tax payers would be $21,902,400, and that to provide school buildings and equipment would require at least $84,325,450.

In 1912 there were a total of 5,883 Lutheran parochial schools, 3,758 teachers, and 272,914 pupils.

Cost of State Common Schools. The estimated cost of the public elementary schools for 1912 was $423,860,569, and for public high schools, $59,026,224. One-third of the total expense of the common schools is borne by the 50 cities having a population of 100,000 or over, but these same cities enroll only one-fifth of the total number of school children. The South Central States raise the smallest and the North Central the greatest proportion of the school revenue from local taxes. In the former States it is 54.34, and in the latter, 81.89 per cent. The same sections represent the extremes in respect to State taxation for school purposes. The Southern group depends upon the State for 30.89 per cent of its school funds, and the Northern for 9.70 per cent.

About 59 per cent of the school expenditures are for teachers' salaries. The average monthly salary for men teachers was $78.08, and for women, $58.04. The average length of school year was 7.9 months.

The increase in school expenditures since 1880 is noteworthy. At that date the expenditure per capita of total population was $1.56; ten years later it was $2.24; it was $2.84 in 1900, and in 1912 it was $5.05. During this time the per cent of the population enrolled in the common schools has remained about constant. The average length of school term has increased from 130 to 158 days, and the average annual cost per pupil from $12.71 in 1880, to $36.30 in 1912. The average monthly wages of teachers has changed from $29.26 to $62.23.

The estimated value of public school property in 1912 was $1,266,382,277. This is more than five times the value of school property in 1880. The expenditures for sites, buildings, libraries, and apparatus in 1912 was $78,018,967.

EDUCATIONAL INVESTIGATIONS AND SURVEYS. Interest in investigating school systems continued through the past year. Two States, Illinois and Maryland, authorized state-wide investigations of their schools. The former secured Professor Lotus D. Coffman of the Illinois State University as director, and the Southern Educational Board has undertaken the work in Maryland. Two cities have also had extensive investigations. The board of education of Springfield, Ill., appropriated $1,000 for the purpose of a survey of their school system, and invited Dr. Leonard P. Ayres of the Division of Education, Russell Sage Foundation, to direct the work. The report covers 160 pages, and was published by the Russell Sage Foundation. The total cost of this survey was approximately $3,200. All expenses other than those met by the board's appropriation were defrayed by the Foundation.

About May 1st, the board of education of Butte, Mont., passed the following resolution:

"Resolved, that a survey be made of the schools of School District No. One, by Dr. George B. Strayer of Teachers College, Columbia University, New York City; Dr. Ellwood Cubberley, head of the Department of Education, Leland Stanford University; and Dr. Frank P. Bachman of New York City, and two assistants. Such survey to commence as soon as practicable, and there is hereby appropriated and set aside from the General Fund of the said School District the sum of Four Thousand Dollars ($4000) to pay the expense of said survey and for the cost of a report from the said persons to the Board of Education as to the conditions of the said schools."

The gentlemen named accepted the appointments, and with two assistants spent one month in the city in examining the schools and making the report, which covers 163 pages, and was printed by the city.

It is not possible in a few words to summarize the findings and recommendations contained in the reports mentioned. In common with most of the other surveys that have been made they call attention to the failure of the course of study in meeting the needs of the children, and the poor quality of most of the teaching. There is a lack of efficient supervision of teachers, and unhygienic conditions exist in many buildings. In each report there are many constructive suggestions regarding the improvement of both the educational and business sides of school management.

The first extensive school survey was made in Baltimore in 1911. Since that time there have been surveys in more than a dozen cities and in two States. The benefits that have come as a result have not been confined to the cities and States concerned. Local school officers everywhere are studying their schools, and endeavoring to strengthen them. Several of the larger cities, notably New York, San Francisco, and New Orleans, have organized departments of educational research, and placed competent directors in charge.

A study of the various survey reports shows that there is no fully accepted body of standards for judging school efficiency. It is noteworthy that each investigator feels it necessary to devote considerable space to a justification of the principles that he employs in judging the quality of instruction, supervision, and the course of study. Questions of finance, attendance of pupils, and similar matters susceptible of statistical treatment, are usually presented in convincing form, but factors of school work, which are not capable of quantitative treatment, are not in general presented so as to carry conviction to the reader.

JUNIOR HIGH SCHOOLS. An increasing number of cities are considering the advisability of reorganizing their school systems by introducing junior high schools. These schools will take the pupils from the present seventh and eighth grades of the elementary school, and from the first year of the high school as now organized. The twelve years of the elementary and high school courses are thus divided into three periods, consisting of six years in the elementary school, three years in the junior high school, and three years in the high school. This same organization is by some called the "six and six" plan, and by others the "intermediate school."

The principal arguments in favor of this newer organization may be stated as follows: The present division of time between the elementary school and the high school is largely the result of traditions which grew up around the old academies. It fails to meet either the social or the psychological requirements of children. If a child enters school at 6 years he should under present conditions enter high school when he is 14 years. This is the age at which the changes due to adolescence are most important. It is argued that if children could begin their high school work at the age of 12, by entering the junior high school, the influence of changes would not be so injurious as now. It is urged that this change from one school to another now comes at the time when the compulsory education law permits children to leave school. If children could get well established in the high school before this age they would in all likelihood remain to complete the course. It is generally agreed that the studies now given to boys and girls in the upper elementary grades are not well adapted to the needs of the children. In most cases the aim is to fit children for the high school, while only about one-half enter the high school, and only one in ten finish the course. The junior high school offers the opportunity to differentiate the courses, and thus to meet the different needs and interests of the children. Three types of courses for schools are provided: A general course for those pupils who will enter the high school, and from there go to college, vocational courses for boys and for girls who will go to technical high schools, or who will at once go to work, and commercial courses for those who will become stenographers and other commercial helpers.

Those who oppose the plan, urge that 12 years is too young for children to know what course they should take, and that the scheme is not democratic.

The chief difficulties that have been encountered in the establishment of junior high schools have been the lack of suitable courses of study, and the scarcity of teachers who have the academic training usually required of high school teachers, and the professional training required of elementary school teachers. The following are among the cities that have introduced some form of junior high school: Berkeley, Cal., Evansville, Ind., Grand Rapids, Mich., Los Angeles, Cal., and Norwalk, Conn.

TEACHERS' PENSIONS. Pension systems have been in force in many of the larger cities for some time. It is only recently, however, that the various States have given the matter serious consideration. At present eleven of the States have some form of teachers' pension system.

The provisions of the pension laws that have been enacted vary greatly. In some States, notably Arizona, Maine, Maryland, and Rhode Island, pensions are provided without salary deductions, while in the other States some form of contribution is required of the teacher. A variety of methods are employed to secure the part of the fund that the State must supply; California contributes 5 per cent of the inheritance transfer tax moneys, Oregon 3 per cent of the school moneys, North Dakota 10 cents, and Washington 20 cents for each child of school age.

Experience has shown that when the salary of the last year is taken as a basis of the pension, school boards are inclined to increase the salary in order that the retiring teacher may obtain a larger pension.

The most common method of allotting pensions now is to give an amount equal to 50 per cent of the average annual salary of the last five years of service.

Actuaries have expressed considerable doubt as to the success of most of the plans thus far adopted. It is claimed that few States have made adequate provision to meet the demands that will eventually be made on their pension funds. Even thus early in the life of teachers' pension systems there have been persistent rumors that several of them are certain to become bankrupt unless the cities in which they exist come to their aid.

The Massachusetts system is regarded as one of the safest. It requires an assessment of from 3 to 7 per cent of the teacher's salary. The State undertakes to pay an amount "equal to an annuity yielded by the total amount of assessments paid by the teacher, plus three per cent compound interest, together with an amount of the annuity granted by the State." No person is eligible for retirement before 60 years, and there is compulsory retirement at 70 years.

TRAINING SCHOOLS FOR TEACHERS. There were 230 public and 54 private normal schools in 1912–13. In the former there were 87,172, and in the latter, 7,282 students. All these schools graduated 20,872 students in June, 1913. Since 1890–91 there has been an increase of 75 per cent in the number of public normal schools; of 197 per cent in the number of students in them; and 283 per cent in the number graduated by them. In most cases the normal school aims to prepare teachers for the elementary school only. The total number of elementary school teachers required in 1911–12 was 535,058. If, therefore, all the elementary schools were to have normal school teachers it would require that the average term of office of teachers should be twenty-five years. If the public schools are eventually to have trained teachers, some way must be devised to greatly increase the facilities for professional training.

VOCATIONAL EDUCATION. Progress in vocational education was more pronounced in 1914 than in any previous year. Various cities established different courses either in existing or in special schools. There has continued to be a conservative tone in discussions relating to industrial education. Superintendents and boards of education are coming to realize the wisdom of moving slowly, and only after a comprehensive report of an expert commission. Three years ago Mr. C. A. Prosser, Secretary of the National Society for the Promotion of Industrial Education, said: "The difficulties of the problem require that we should proceed on the basis of investigation and careful experimentation. We need, perhaps, most of all a frank recognition of the difficulties which have thus far been pointed out, and a diligent search for those as yet uncovered. Everywhere there should be careful, unbiased, scientific, thoroughgoing, and more or less specialized study of social and industrial conditions, industries, occupations, and workers. *The most important contribution that could be made by either public or private agencies would be successful experiments in new fields of industry that as yet remain practically untouched.*"

It is interesting to note that Mr. Prosser has expressed the attitude that is most noticeable at the present time.

At a meeting of the Iowa State Teachers' Association in November, 1913, a committee was appointed for the purpose of investigating and reporting upon legislation for vocational education and vocational guidance in the State. When this committee met it construed its duties to be the following:

1. The gathering of data from:
    - a. Industries.
    - b. Commercial pursuits.
    - c. Labor.
        - (1) Skilled.
        - (2) Unskilled.
        - (3) Juvenile.
    - d. Education with special reference to waste under existing conditions, caused by
        - (1) Elimination.
        - (2) Retardation.
        - (3) Juvenile delinquency.
        - (4) Inefficient schools.
2. The interpretation of the above data as a basis for the practical recommendations of the committee.

The foreword for the report which was published in November contains the following quotation:

"The committee felt that it would be a very easy matter to make a superficial study of the legislation of Massachusetts, Indiana, Wisconsin, etc., and from such investigation to formulate legislation which it might recommend and possibly secure through the hasty action of the legislature. But it seemed to be the unanimous opinion of the committee that much of this legislation had not been successful, that all of the States in which work had been done were more or less open to criticism as to the real value of some phases of their legislation; and more than this, that Iowa presented definitely her own problem and that this problem must be known, not through hasty reports and immature conclusions, but by means of a thorough survey of all of those phases which enter into the industrial and vocational life of the State.

"It was also thought that any legislation brought forth hastily before such a survey had been made and interpreted, must of necessity bring to Iowa far greater mistakes than those mentioned in any of the preceding States. Consequently, the committee has attempted to begin a big thing, a piece of work that could not be accomplished in the length of time given to the committee for its report.

"In many cities the Boards of Trade or similar organizations are coöperating with the Boards of Education in efforts to determine just what type of training is needed in their cities. The most common practice of such joint bodies is to institute vocational or industrial surveys. The State Department of Education of Indiana offers the following suggestions:

"The first step in the establishment of a vocational department or school is to make a preliminary investigation to determine:

"1. If there is a well defined need for a vocational department or school in that community.

"2. For what industries or occupations the proposed department or school should prepare.

"This may be done: (1) By ascertaining what has become of the boys and girls who left school at fourteen years of age and determining which forms of vocational education, industrial, agricultural, or household arts, would best meet their needs. (2) By listing the predominant industries of the community and ascertaining whether or not these offer opportunities for skilled employment and proper inducement for a permanent occupation. (3) By ascertaining the facilities already available for giving vocational instruction in the occupations and industries represented in the community.

"3. It should next be determined to what extent the employers will coöperate with the local school authorities in providing the vocational training most needed in that community.
"4. It must finally be determined whether an all-day school, part-time, or evening classes will best meet the needs of this particular community.

"Such a preliminary investigation should be carried on by the local school authorities or by a committee appointed by them (Board of Trade, Chamber of Commerce, Civic Club, Central Labor Union), working in coöperation with the State Board of Education. The Department of Public Instruction will render whatever assistance it can to any committee making such an investigation and may, in some instances, make the investigation, if requested by the local authorities to do so.

"A plan that has proven very successful in arousing interest in the vocational work is to appoint a local commission on vocational education to study the problem and coöperate with the State department in making such investigation. Such local commission might well consist of employers and employees, representing the industries of the locality, of women of experience in social and industrial activities, representatives of local civic and social organizations, and members of boards of education, and might be continued as a permanent development committee for vocational education in that community."

One of the most significant industrial surveys was conducted in Richmond, Va., under the auspices of the National Society for the Promotion of Industrial Education. The General Survey Committee consisted of the following: Dr. Leonard P. Ayres, Director Russell Sage Foundation, Chairman; Mr. Charles H. Verrill, Chief Editor U. S. Bureau of Labor Statistics; Mr. L. W. Hatch, Chief Statistician N. Y. Bureau of Labor; Dr. J. A. C. Chandler, Supt. of Schools, Richmond, Va.; Prof. C. R. Richards, Director of Cooper Union, New York; Mr. Chas. H. Winslow, Special Agent U. S. Bureau of Labor Statistics; and Mr. C. A. Prosser, Secretary of the National Society.

The Director of the school survey was Dr. Leonard P. Ayres, and the director of the industrial survey was Mr. Charles H. Winslow. The report of the General Survey Committee states that the aims of the survey on the part of the National Society were such as the following:

"1. To prove the necessity of a knowledge of industrial and school conditions in the making of a programme for industrial education in a city.
"2. To show the kind of facts about industry and about the schools which need to be gathered.
"3. To develop a proper method for studying the industries and the schools for purposes of industrial education.
"4. To secure the coöperation of national and local public and private agencies in the making of a type survey and to bring to bear upon the task the best expert service and advice that could be secured.
"5. To make the annual convention of the Society more helpful to the convention city by focusing much of the discussion on its problems, and leaving with it not only information as to conditions and possibilities, but also wide discussion and expert advice through the membership of the National Society and others, as to the development of industrial education in the city."

They state the purposes of the Richmond authorities in having the survey made as the following:

"1. To make the annual convention in Richmond most helpful to a city interested in providing practical education for its people.
"2. To give the city a knowledge of the industrial and school facts and conditions which must be considered in developing a programme of industrial education, and the best expert advice as to what Richmond should do and how she should do it, in order that, as one Richmond school official expresses it, "Richmond may not be working in the dark."

See also section *Education*, under various States of the United States, and Universities and Colleges.

EFFICIENCY, Municipal. See Municipal Government.

EGYPT. A British protectorate in northeastern Africa; until 1914 nominally under the suzerainty of Turkey, though virtually under British control. Capital, Cairo.

Area and Population. Exclusive of the Sudan, the area is given as 363,181 square miles, of which only 12,013 square miles are settled and under cultivation. The population in 1907 numbered 11,189,978, not including nomadic Bedouins, estimated to number over 97,000. By nationalities the population was made up as follows: 10,903,677 (10,366,046 sedentary, 537,631 nomadic) Egyptians, and 286,381 foreigners, of whom 69,725 Turks, 62,973 Greeks, 34,926 Italians, 20,853 British including Maltese, 14,591 French including Tunisians, 7704 Austrians and Hungarians, 2410 Russians, etc. Mohammedans numbered 10,366,826; Copts, 706,322; Jews, 38,635. In 1907 Cairo had 654,476 inhabitants; Alexandria, 332,246; Tanta, 54,437; Port Saïd, 49,884; Mehala el Kobra, 47,955; Mansura, 40,279; Assiut, 39,442; Damanhur, 38,752; Fayum, 37,320; Zagazig, 34,999; Damietta, 29,354; Minieh, 27,221; Sherbin, 25,473; Akhmim, 23,795; Beni-Suef, 23,357; Menuf, 22,316; Shebin el Kom, 21,576; Mellawi, 20,249; Qena, 20,069.

Education. The provincial councils have now become entirely responsible for elementary vernacular education in their districts, and all schools maintained by them are inspected by the ministry of education. The ministry still retains, under its direct control, certain elementary schools belonging to trusts controlled by the ministry of Waqfs (pious foundations); these schools or "Maktabs" numbered 142 at the end of 1913, with an attendance of 14,027. Higher primary schools, 34, with 7610 pupils; provincial council maktabs 911, with 57,175; private maktabs (grant-in-aid), 3394, with 174,282; provincial council higher primary schools, 78, with 10,493. Total number of establishments under direct management of the ministry of education, 198, with 27,864 pupils; total number of establishments under inspection by the ministry, 4493, with 253,295 pupils. Of the latter total, 227,434 were boys, and 25,861 were girls. A free primary school has been established in Cairo. The demand for secondary instruction increases, and opposition to female education has now almost entirely disappeared. Industrial schools have been founded to meet the requirements of agricultural and industrial districts.

AGRICULTURE. In the table below are shown areas under main crops in feddans (1 feddan = 1.038 acres) in 1913, as distributed in Lower Egypt, Upper Egypt, and the Suez governorate; with the total area for Egypt, and the total yield (cotton and sugar in kantars, other crops in ardebs of 5.44 bushels):

	Lower	*Upper*	*S.G.*	*Total*	*Yield*
Cotton .	1,339,565	388,485	44	1,728,094	7,554,000
Wheat .	678,747	626,634	197	1,305,578	6,972,000
Barley .	165,785	203,300	73	369,158	2,078,000
Rice ...	229,149	13,218	..	242,367	1,280,000
Corn ...	1,173,716	458,471	369	1,632,556	10,350,000
Millet ...	....	220,204	..	220,204	1,368,000
Sugar ..	2,199	46,241	28	48,468	21,629,000

The area under cotton cultivation exceeds that of 1912 by only 1279 feddans. The price of cotton declined during the year, notwithstanding a shortage in the American crop. Of the 1,723,000 feddans reported as planted to cotton in 1913, 486,600 feddans were attacked by the cotton worm, as compared with 980,300 in 1912.

The amount of sugar cane treated was 741,000 tons, as compared with 537,000 in 1912, and the sugar content was 12.8 per cent. The census of live stock in 1913 shows an increase of 17,000 cattle, and a decrease of 19,000 buffaloes. The import of these animals from the Sudan in 1913 was 10,424, and from other countries, 33,605; of sheep and goats from the Sudan, 98,886, and from other countries, 311,603. The percentage of deaths from cattle plague in 1913 was 0.14, compared with 0.42 in 1912. In July, 1912, 186,000 cattle were immunized by double inoculation.

From Lord Kitchener's report, dated Cairo, March 22, 1914:

"The introduction of a system of agricultural coöperation in the village life of the community has been for some time the subject of general discussion. The possibility of successfully working such a system in Egypt, and the advantages to be obtained from it, have been demonstrated by experiments in several villages throughout the country. The creation of a Ministry of Agriculture has greatly facilitated the development of village syndicates, as the new Ministry will be able to supervise and assist the agricultural operations which the coöperative societies will undertake in the villages. Undoubtedly the principal factor on which their success will depend will be the degree of facility with which they are able to obtain advances of money at cheap rates. Such rates can only be obtained by establishing syndicates on the legal basis of registered civil companies, and by placing their finances under the supervision of the Finance Ministry; as soon as legislation on these lines has been enacted we may hope to see a considerable development of the application of the coöperative principle to agricultural life in the villages. The help thus afforded to the smaller cultivator will be of great value as soon as the direction of the village syndicates has been rendered thoroughly reliable both as regards its operations and its finances."

IRRIGATION. "Considering the abnormally low Nile, the year [1913] has been a far more prosperous one than could have been expected. Formerly, so considerable a shortage of water would have been almost a national calamity, but the completion of the Aswân Dam at the end of 1912 permitted of sufficient storage to mature the cotton crop, the main source of the riches of the country. Unfortunately, the southern portion of the Nile Valley, which is not under perennial irrigation, suffered severely from drought, as the river was not high enough to inundate the basins. A large number of people had in consequence to seek employment elsewhere, but the drainage works in the Delta offered an opportunity of providing many of them with remunerative work. The government gave assistance as far as possible, and the population of the affected districts showed in a most admirable manner that, by hard work, and adapting themselves to the situation, they were able to some extent to make good their losses.

"The low flood, which had this unfortunate effect in Southern Egypt, was followed during the latter part of the year by a serious shortage of water in the river, which has been the lowest on record for over a century, so that, notwithstanding all the storage resources, there will be only just sufficient water to irrigate the cotton crop sown in the spring of 1914, and other cultivation must suffer to some extent; while rice, which requires a disproportionately large amount of water, cannot be grown at all. The views expressed in my last year's report as to the necessity for increasing the supply of storage water for early summer use, by the erection of a dam on the White Nile, have been thus fully confirmed. . . . So far as the summer supply of Egypt is concerned this dam would not, when the possible development of Lower Egypt as well as the conversion of the remaining basins in Upper Egypt is taken into account, be adequate of itself to supply all the water required, though it is certain to meet all requirements for many years to come. Moreover, the erection of a dam as proposed might not be justifiable simply as a means of forming a storage reservoir to increase the Egyptian summer supply, since the true solution of this latter problem apparently would be to deal with the river as it flows from the great lakes, in order to produce a steady and adequate flow. But the site selected has the important advantage of permitting some control of excessive flood waves passing down the main Nile. Therefore the erection of a dam for the double purpose of control of excessive floods, and of incidental use as a storage reservoir, is very thoroughly justified, but its construction will not mean that resort will never be made to regulation on the great lakes as a final settlement of the problem of Egypt's summer water when all available areas are being developed. As a result of borings on the proposed site it was found that comparatively good rock can be reached at a reasonable depth right across the river bed. Detailed plans have yet to be prepared, but it is expected that the whole work will cost well under £1,000,000."

COMMERCE. In the table below are given imports and exports by principal countries of origin and destination, with the totals, including other, in thousands of pounds Egyptian.

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
Great Britain ...	7,991	8,496	16,022	13,648
Med. possessions.	253	207	14,000	13,000
Far Eastern pos..	1,314	1,778	123	110
Turkey	2,754	2,724	......	......
France	2,411	2,513	2,707	2,787
Aus.-Hun.	1,680	1,940	1,481	1,757
Germany	1,421	1,609	3,886	4,066
Italy	1,243	1,478	949	1,013
Belgium	1,103	1,178	.....	.....
Rumania	691	1,091	.....	.....
United States ...	403	525	4,121	2,485
Russia	.....	.....	2,056	2,242
Switzerland	.....	.....	1,009	1,012
Total	25,908	27,865	34,574	31,662

The total export of cotton has decreased from £E27,529,300 in 1912 to £E25,513,100 in 1913. The United Kingdom took £E10,996,700, as against £E12,572,200 in 1912; the United States, £E2,442,500, as against £E4,072,200 in 1912. Total export of cotton seed was £E3,294,800, of which the United Kingdom took £E1,698,700, and Germany, £E1,480,704. The cigarette export was £E395,000. Coal arrived to the amount of 1,686,700 tons, valued at £E2,010,000, of which the United Kingdom contributed 1,605,000 tons, valued at £E1,909,700. There is a general decrease in imports of articles of food and clothing. The increase of 58 per cent in the Rumanian imports, and 35 per cent in those from the British possessions in the Far East, were due to the shifting of the flour market.

The exports show a decrease of 8.89 per cent. The quantity of cotton exported from the 1913–14 crop in the last months of 1913 was smaller than that exported in 1912 from the 1912–13 crop, and the prices rated lower. The proportion of cotton-seed exported to Germany continued to increase with a corresponding decrease to the United Kingdom.

Tobacco. The withdrawals of leaf tobacco decreased from 8,206,000 kilograms in 1912 to 8,177,000 in 1913. Russian tobacco advanced from 1,027,000 kilograms in 1911 to 1,511,000 in 1912, and 1,853,000 in 1913. Tobacco in bond decreased from 186,000 bales Dec. 31, 1912, to 167,000 bales Dec. 31, 1913, due to the fact that, owing to the disturbed political conditions in eastern Europe, merchants transferred their stocks to Alexandria in 1912. The export of cigarettes has declined by 34,000 kilograms, due to a large extent to the fact that Sweden has lately raised its duty on cigarettes and established local factories.

COMMUNICATIONS. There has been a decrease in railway traffic and a corresponding reduction in receipts—£E3,819,000 in 1913, and £E3,916,000 in 1912. Expenditure in 1913, £E2,190,000; in 1912, £E2,291,000. Capital value of railways 1913, £E27,291,943; interest on capital, 5.97 per cent. Capital expenditure on State railways in 1913 amounted to £E446,000. For 1914, expenditure on capital works, £E443,000 were granted. There were 1512 miles of State railways in operation Jan. 1, 1913. In addition there were 1280 kilometers of light railways—the Egyptian Delta Light Railways, the Chemins de Fer de la Basse-Egypte, and the Fayum Light Railway. There is an increase of 32 kilometers, as compared with 1912, due to the completion of a new line from Salahib to Baltim, constructed by the Delta Light Railway Co.

Steamers entered at Alexandria in the 1913 trade, 1932, of 3,718,660 net registered tons; cleared, 1927 steamers, of 3,698,396. There passed through the Suez Canal in 1913, 4979 vessels, of 19,758,040 net tons.

FINANCE. Revenue and expenditure for three years are shown in the table below:

	1911	*1912*	*1913*
Revenue ...	£E16,793,000	£E17,515,000	£E17,468,000
Expenditure	14,872,055	15,470,000	15,728,785

The alteration of the date of the financial year has involved the preparation of an intercalary budget for the first quarter of 1914, which estimates for a surplus of £E155,000. All unused balances lapsed on March 13, 1914, with the inception of the new system. The budget for 1914–15 was estimated to balance at £E18,162,000.

The total outstanding debt Dec. 13, 1913, amounted to £E94,202,540, and the annual charge for interest and sinking fund to £E3,552,000.

ARMY. The Egyptian army, formed of selected recruits, is limited by law to a strength of 18,000 combatants in time of peace, and is recruited by compulsory service, as all male inhabitants are liable. The chief command is vested in the Sirdar and Governor General of the Sudan, in 1914 as in the previous year, Lieut. Gen. Sir Reginald Wingate, who also commands the detached body of the British Army of Occupation, stationed in the Sudan, quartered at Khartum. The British army force maintained in Egypt naturally underwent considerable change after the outbreak of the European War, and it was reported that the places of certain of the regular troops had been taken by colonials and volunteers. There was, at the end of the year, no positive information as to the number and nature of the troops.

GOVERNMENT. Dec. 17, 1914, the Foreign Office issued the following statement: "In view of the state of war arising out of the action of Turkey, Egypt is placed under the protection of his Britannic Majesty, and will henceforth constitute a British protectorate. The suzerainty of Turkey is thus terminated. His Majesty's government will adopt all the measures necessary for the defense of Egypt and the protection of its inhabitants and interests. The King has been pleased to approve the appointment of Col. Sir Arthur Henry McMahon, who has been Foreign Secretary to the government of India since 1911, as his Majesty's High Commissioner of Egypt."

A new ruler was chosen to succeed Abbas (II) Hilmi in the person of his father's brother, Hussein Kemal Pasha, with the revived title of Sultan of Egypt. To him King George sent, Dec. 19, 1914, the following message: "Your Highness has been called to undertake the responsibilities of your high office at a grave crisis in the national life of Egypt. I am convinced that you will be able, with the coöperation of your Ministers and the protectorate of Great Britain, successfully to overcome all influences which are seeking to destroy the independence of Egypt, and the wealth, liberty, and happiness of its people."

By the establishment of the new protectorate Turkey loses nothing but prestige.

HISTORY

Among the birthday honors announced in June was an earldom for Lord Kitchener, betokening appreciation of his remarkable work in consolidating the British rule in Egypt. The constitutional reform of July 21, 1913, creating a more representative Legislative Assembly, was fully vindicated in 1914 by the work of the new Assembly, which held its first session from January 22 to June 17. Besides examining some 600 petitions, and formulating its own rules of procedure, it passed on the budget for 1914–15, and dispatched the Court of Criminal Appeal Bill, the Coöperative Agricultural Syndicates Bill, the Weights and Measures Bill, the Provincial Marshes and Pools Bill, the Destruction of the Boll-worm Bill, the Creation of Higher Commercial Schools Bill, and other measures of sound practical statesmanship. Although the British authorities felt that, for the present at least, the Legislative Assembly should confine itself to advising the Ministry and criticising Bills, without presuming to discuss the fundamental organization of the government or to demand a responsible ministry; nevertheless the Assembly developed a strong opposition to the Said cabinet—so strong that Said, who was not especially in favor with the real authorities, felt obliged to resign on April 3. After Mustapha Fehmy Pasha had unsuccessfully attempted to form a new cabinet, Hussein Rushdi Pasha, former Minister of Justice, succeeded on April 5 in forming a cabinet as follows: Premier and Minister of the Interior, Hussein Rushdi Pasha; public works and war, Ismail Sirri Pasha; education, Ahmed Hilmi Pasha; finance, Yussuf Wahba Pasha; *Waqfs*, Mohammed Moheb Pasha; justice, Abdel Khalek Sarwat Pasha; foreign affairs, Abdi Yeghen Pasha; agriculture, Ismail Sidki Pasha.

On July 25 an attempt was made to assassinate the Khedive, who was returning in his automobile from a visit at the residence of the Turkish Grand Vizier in Constantinople, when a young student by the name of Mahmud Mazhar fired several pistol shots, wounding the Khedive in the right forearm and in the cheek, but inflicting no serious injury. The would-be assassin was shot dead on the spot by a gendarme. In November the Khedive, by associating himself with the Turkish military operations against Egypt, incurred the resentment of the British government and was superseded by his uncle, Hussein Kemal, who assumed the title of Sultan. On August 6 a Khedivial decree was issued putting Egypt in a state of war and under the protection of Great Britain, as a consequence of Great Britain's participation in the War of the Nations. While the local German journal, *Die Aegyptische Nachrichten*, was immediately suspended, the German and Austro-Hungarian consular representatives in Cairo were allowed to remain, under the protection of the Capitulations, until in September they were requested by the military authorities—so it was popularly believed—to leave the country. The feeling in Egypt, as represented by the native newspapers, especially in the cities, was at first distinctly favorable to Germany; but as the lines of the press censorship were drawn more closely, and after some 40,000 British and Indian troops had arrived (about September 9), there were few public expressions of anything but loyalty to British rule. The November session of the Legislative Assembly, which might have afforded an opportunity for disloyal agitation, was postponed from Nov. 1, 1914, to Jan. 1, 1915. In order that economic disturbances might not complicate the situation, the British government guaranteed a loan of $25,000,000, to be issued by the Egyptian government in the form of London Treasury Bills, for the provision of sufficient currency to finance the cotton crop.

As noted above, under *Government*, Egypt was declared a British protectorate on December 17, and on the following day the reigning Khedive, Abbas Hilmi, was deposed and Prince Hussein Kemal, uncle of Abbas Hilmi, and eldest living prince of the family of Mehemet Ali, was appointed "Sultan of Egypt." The nomination of Hussein to succeed his nephew was clearly a violation of the *firman* or law of June 12, 1866, whereby the succession to the Khedivial throne had been made direct from father to son: but apparently the British government considered that the war, and the transformation of the Khediviate into a Sultanate, had rendered it no longer necessary to observe this constitutional provision, and felt no compunction in setting aside the 15-year-old son of Abbas Hilmi, Prince Mohammed Abdul Mouneim, who had hitherto been recognized as the heir-apparent to the throne of Egypt. Hussein Kemal, it may be observed, is a man over 60 years of age, experienced in administrative functions, and educated in the Paris of the Second Empire.

The British protectorate over Egypt was promptly recognized by France, Great Britain in return recognizing the Franco-Moroccan Treaty of 1912. Italian opinion appeared on the whole to sanction the British decision also.

The effect of the war felt by the Egyptian railways was the necessity for increased economy and on the 7th of August the State railways diminished their service, withdrawing the Cairo-Alexandria expresses, two each way, and also the night service in each direction between these cities, and six of the main-line trains on the Upper Egypt section. The service of the Cairo-Mataria suburban line was reduced one-third, and the lights at the Cairo main station were ordered extinguished at 8 P. M., while the other stations were not lighted at all.

ELARSON. A new arsenic derivative combined with chlorine, its chemical designation being chlorarsenobehenolic acid. It contains about 13 per cent of elementary arsenic and 6 per cent of chlorine. The drug has the therapeutic qualities of arsenic, but is said to be much better utilized in the system and therefore effective in smaller doses than other arsenical preparations, and also possesses the advantage of being relatively free from irritating action on the stomach and intestines. Elarson is indicated in the various anæmias such as chlorosis, in many skin diseases, chorea, and in fact wherever arsenic is indicated. The substance occurs as a whitish, amorphous, tasteless powder, insoluble in water, slightly soluble in alcohol and ether.

ELECTION LAWS. See ELECTORAL REFORM.

ELECTION OF SENATORS, DIRECT. See ELECTORAL REFORM.

ELECTORAL REFORM. Under the following topics, some of the most important changes and reforms in electoral procedure and laws in the United States are mentioned and listed.

INITIATIVE AND REFERENDUM. Amendments to State constitutions providing for either partial or general initiation and referendum in legislation were submitted to the voters of South Dakota and Wisconsin. In the former State, the proposed change was limited in its application to school laws and was adopted; in the latter, it was operative with reference to general legislation and was defeated. Conspicuous instances of the employment of the referendum occurred in Massachusetts, California, Washington, and Missouri. In Massachusetts, the voters abolished the requirement of party enrollment for primary elections; those of California registered their opposition to the prize fight law; and those of Missouri rejected the full crew law enacted by the Legislature.

RECALL. An amendment to the State constitution granting to the voters the power of recalling elective officers, including judges, was adopted in Kansas. In Louisiana, the amendment providing for the recall of officers other than judges was accepted, but the proposition to recall judges was defeated. As a part of the proposed amendment relative to the initiative and referendum, the voters of Wisconsin decided against the recall.

POPULAR ELECTION OF UNITED STATES SENATORS. In 1914 there occurred the first general election in which the Seventeenth Amendment to the Constitution was operative in all of the States in which United States Senators were to be elected. In twenty-eight of the States, these elections were held with machinery erected, and suffrage qualifications imposed, by State laws, or that created by the special law of Congress to cover cases where the States had not at that time made proper provision.

WOMAN SUFFRAGE. Amendments contemplating the extension of the suffrage to women were submitted in the following States: Nevada, Montana, North and South Dakota, Nebraska, Missouri, and Ohio. Long and actively contested campaigns were conducted in each of these States for and against these amendments, and, in only two of the seven, Nevada and Montana, were they adopted. See WOMAN SUFFRAGE.

ELECTION LAWS. In the State of New York, the Assembly, under the urgence of Governor Glynn, enacted a law providing for the direct nomination of party candidates for public office. The election laws of New York were also amended by three bills passed in 1914: the Duhamel bill provided for additional sample ballots and instructions for the voter on registration and election days; the Foley bill permitted women to be present as watchers when the woman suffrage amendment to the State constitution should be voted upon; the most important of the three, the Blauvelt bill, contained provisions to perfect the laws for voting under the Massachusetts ballot, to provide for a square instead of the long ballot, and to require more promptness in the counting of the votes. The last bill reduced the number of voters requisite for an election district from 500 to 350 in New York City, and to 300 elsewhere. The ostensible purpose of this legislation was to render the booths less crowded and more accessible to the voter. Possibly the most important of these amendments was that providing that the nominations of party candidates for municipal officers, which were to be filled at elections held at a different time from general elections, should be made in the manner prescribed for nominations for all offices to be filled at those general elections, that is, by primaries, except in that these primaries should not be held coincident with the fall primaries and should be unofficial in character. This legislation was sharply criticised on account of the vagueness of the definitions made of the various qualifications for voting, and on account of the fact that it gave the alleged corrupt political organizations undue advantages. The primary election laws of Massachusetts were amended in that the requirement of enrollment in some one of the incorporated political parties before participation in the election was abolished.

ELECTRICAL ENGINEERING. See ELECTRIC POWER, TRANSMISSION OF; ELECTRIC RAILWAYS; RAILWAYS; WIRELESS TELEGRAPHY AND TELEPHONY; ETC.

ELECTRICAL INDUSTRIES. The development of hydroelectric plants was especially restricted during the year on account of the prevailing business depression following the outbreak of the European War, and because there were many plans for legislation, both at Washington and in the various State capitals, looking toward the control of water-power sites. At the close of the year little had been accomplished in this direction, however, though agitation of the question of restricting private ownership served to restrain promoters from undertaking new enterprises and alienated the interest of the investing public in propositions of this sort. The most important of the measures referred to was the so-called Adamson Water Power bill, on which the Senate was holding hearings at the end of the year. This bill embodied certain regulations under which the National government might lease power sites on navigable waters. It was passed by the House on August 4. The Ferris bill, covering the use of water powers on public lands, was also before the Senate.

The use of electric power in the various industries was extended during the year at only a moderate rate on account of the general depression in business and the outbreak of the European War. An increasing amount of energy was arranged for in the iron and steel industries, where the operation of electric arc furnaces was found to give satisfactory and economical results in steel making, particularly for rails. In rolling mills there was a substitution in several instances of electric motors for steam engines, as the former were found to be equally suited to the enormous fluctuations of load, when applied to work of this kind and to involve lower costs for repairs and more economical power consumption. At Witherbee, Sherman & Co.'s iron mine at Mineville, N. Y., with an annual output of more than 700,000 tons of ore, magnetic separation was employed with striking success. Electric power was of course applied for hoisting from a 900-foot shaft; and the magnetic method of concentration which was applied to about four-fifths of the output was reported to be giving excellent results, even when it is realized that the ore from this particular group of mines was variable in the amount of iron contained, the proportion of the latter ranging from 25 to 55 per cent. A brickmaking plant in Illinois, with an annual output of 50,000,000 bricks, substituted electric motors for steam engines, with a total installation of about 1000 horsepower. Careful tests showed that the amount of power consumed per 1000 bricks turned out was about 13 kilowatt hours.

Exports of electrical machinery, appliances, and instruments from the United States during the fiscal year ended June 30, 1914, reached a total of $25,060,844, a decrease of $1,711,972 from the figures for 1913.

There was a noteworthy increase in the number of electrically-propelled vehicles in use, and a constantly increasing use of electric power for domestic uses, such as for cooking, washing, ironing, and the operation of motors for vacuum-cleaners, pumps, and sewing machines.

The electro-chemical industries, though restricted to moderate activity by the European War, showed satisfactory progress in the quality and novelty of products turned out. In Norway, the further development of cheap hydroelectric power was resulting in the production of new records for efficiency in the fixation of atmospheric nitrogen and the manufacture of other useful substances.

The following table, from figures compiled by a well-known authority, represents the change in gross earnings of the various lines of electrical industry from 1913 to 1914.

	1913	*1914*
Electrical manufactures	$ 375,000,000	$ 450,000,000
Electric railways	650,000,000	730,000,000
Central stations	450,000,000	400,000,000
Telephone service	350,000,000	350,000,000
Telegraph service	85,000,000	85,000,000
Isolated plant service...	125,000,000	125,000,000
Miscellaneous	125,000,000	125,000,000
	$2,160,000,000	$2,265,000,000

ELECTRIC BATTERIES. Large generating stations in 1914 continued the introduction of storage batteries for absorbing the surplus power of the generating units during the hours of light load and for assisting them at the peak or periods of maximum demand upon the station. Such installations were of course confined to the largest stations, although many isolated plants such as those in hotels and department stores found the use of a storage battery in connection with the generating plant an efficient aid to uniform operation.

The success of storage-battery street cars on the cross-town and belt lines in New York City during the year led the management of these lines to decide upon the replacement of all horse-cars, a small number of which were still in use during the year. The lines mentioned were those not already equipped with the slot conductor system. A considerable use of the storage battery was made for the propulsion of cars on some of the steam railways in Europe. In Germany, shortly before the outbreak of the war, it had been announced that there were 176 such cars, operating on 4000 miles of line and representing an investment of $3,000,000. These used lead storage cells, and were run as single units on branch lines and in other localities where traffic was light.

As referred to in the 1913 Year Book, electric storage-battery trucks for moving freight in railroad freight houses and on steamship piers were increasingly used; while in large passenger stations they had almost entirely supplanted hand-operated trucks for baggage and express matter. At the close of the year, the Pennsylvania Railroad was trying out a combination passenger and baggage car equipped with Edison storage batteries and having four 20-horsepower motors. It was used in regular service on a 4-mile branch line with a view to the general introduction of such cars on other branches of the road.

A primary battery was invented by Dr. E. Bellini and placed on the market in Europe during the year. It used plates of lead amalgam and carbon in an acid solution, consisting of 8 parts sulphuric and 12 of nitric acid in 100 parts of water. The negative plates were made in the proportion of 10 parts mercury and 90 parts lead by weight. One of the characteristics of the battery which gives it a large capacity is that of making it with four positive and three negative plates with a total area of 900 square centimeters, which reduced the internal resistance to 0.022 ohms. It was found possible to secure a discharge capacity of 112.5 ampere hours, the output then being sharply diminished by the exhaustion of the acid. The low electromotive force, only 0.11 volt, necessarily restricted the application of such a cell to special uses.

ELECTRIC FURNACES. See Metallurgy.

ELECTRIC GENERATORS AND MOTORS. See Dynamo Electric Machinery.

ELECTRIC LIGHT AND POWER. See Municipal Ownership.

ELECTRIC LIGHTING. The nitrogen-filled tungsten lamp, first brought out in 1913, was developed in 1914 to a point of wide commercial application, and improvements in efficiency and durability were announced. The energy consumption of such lamps was steadily reduced by improvements in manufacture and selection of materials, so that the 1000-candle power series lamp using 20 amperes current operated at 0.63 watts per mean spherical candle power and the 32-candle power series lamp using 7.5 amperes operated at 1.25 watts. In the multiple type the average specified consumption had reached a value of 0.72 watts per candle power for the 1000-watt size and 1.08 watts for the 200-watt size. The average increase of efficiency over lamps of the same kind available at the end of 1913 was about 40 per cent. The gas-filled lamp was making great headway especially in displacing the vacuum type of tungsten lamp for small street lights and arc lamps in large cities. A noteworthy competitor of this lamp was an improved magnetic flame-arc lamp, whose high efficiency was due to better selection of materials for the core of the carbon, as well as the method adopted for concentrating and diffusing the radiation.

The gas-filled tungsten lamp achieved a wide success both in the United States and Europe, its use, however, being restricted to large public places and outside situations, as units small enough to be suitable for domestic interior illumination had not come into extensive use.

An attempt was made to adapt the lamp for domestic use, but without much success. It was the opinion of engineers that an atmosphere of mercury vapor would be better than nitrogen for use in lamps with small filaments, on account of the well-known increase of radiation of greatest brightness, which moves towards the violet end of the spectrum in proportion as the temperature of a radiating body is increased. New York, Chicago, and other large cities were installing large numbers of nitrogen tungsten lamps for street illumination to replace one or more of the various types of arc lamps that had been in use. It was confidently expected that the satisfactory results achieved in a few months' service would lead to their further introduction.

Another use for the gas-filled lamps was the illumination of photographic studios, especially those making moving pictures. The color of its light caused it to be preferred to that of the mercury vapor lamp commonly used for such purposes.

The United States navy was testing in service a novel type of searchlight lamp, in which the carbon electrodes were surrounded with burning alcohol vapor, whose temperature, being lower than that of the carbon electrodes in the arc, served to cool the latter and lessen their consumption. Owing to their operation at a lower temperature the efficiency of the arc was not only increased, but the arc was confined to a smaller space, thus simplifying accurate focusing with the reflector. In tests the new lamp showed about six times the intensity of the ordinary arc, using the same reflector, and with the same energy consumption. A further advantage in the use of alcohol vapor surrounding the electrodes was that a much greater current density can be used without excessive burning of the carbons, and consequently a brighter light produced, in addition to which, smaller carbons were used than were found necessary in the ordinary arc lamp.

Another type of searchlight that was under investigation by the Navy Department had a gold-plated reflector, developed by a French inventor, that was said to possess many advantages over the silver-plated reflector commonly used, as the gold surface was not corroded by the action of deposits from the carbons, nor was it so susceptible to atmospheric conditions and the destructive effects of smoke and gases resulting from gun fire in its immediate vicinity. Owing to the slightly greater reflecting power attained by the gold mirror it was possible to attain a greater brilliancy of illumination of objects at a distance than with the kind formerly in use.

It was reported by the Committee on Incandescent Lamps at the 1914 Convention of Edison Illuminating Companies that 100,000,000 tungsten lamps were manufactured annually in the United States, and 3,000,000 annually imported (up to the last date that such figures were available). The report drew attention to the fact that in 1907, the year they were first introduced on a commercial scale, the average life of such lamps was only 300 hours. The life had been increased to a figure somewhat beyond 1000 hours in lamps turned out at the end of the year. It was stated that the 200- and 300-watt hour sizes operate at an energy consumption of 0.75 watt per candle power. The report, in treating the subject of arc lamps, mentioned the improvements that were made during the past year in the magnetite lamps by changes in the arrangement and position of the electrodes, as well as improved double globes for directing the radiations. These improvements have increased the efficiency of this type of arc lamp by 30 per cent.

The Illuminating Engineering Society continued its well-known activities during the year and published much valuable data on the subjects of gas-filled tungsten lamps, the measurement of glare from reflecting surfaces, the best kind of light for the eyes, and efforts for obtaining an equality to daylight by artificial illumination.

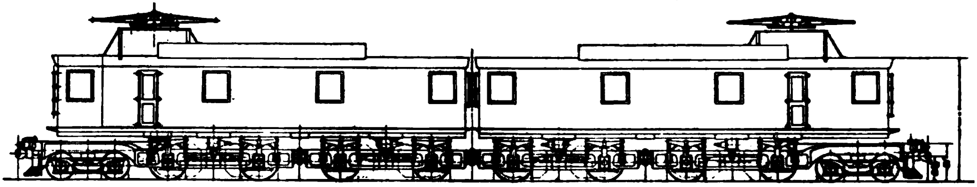
ELECTRIC POWER, TRANSMISSION OF. During 1914 several high tension systems were completed, and began supplying energy. While most large central stations outside of those in the principal cities were hydroelectric, there were a number in various parts of the world entirely steam-driven, that were important not only for the actual amount of energy output, but also the distance to which the latter was transmitted. The tendency in the design of transmission circuits was constantly to a higher operating voltage, and at the close of the year there were more than 35 stations in various parts of the world having a total developed capacity of 1,800,000 kilowatts, which was transmitted at 100,000 volts and over, the maximum pressure employed being 150,000 volts. Among the longest transmissions over a single line there may be mentioned that from Niagara Falls to Windsor, Ontario, 250 miles, and at least two in California, transmitting 240 miles. While certain systems were supplying energy over distances varying from 400 to 1000 miles, these were in effect networks of lines, supplied from widely separated generating stations of the system. The Mississippi River hydroelectric development at Keokuk, Iowa, that began transmitting energy to St. Louis, as mentioned in the 1913 YEAR BOOK, extended its lines during 1914, in order to reach several large manufacturing and mining centres. One of the latter circuits was said to have the largest single load transmitted from any power plant, namely 4000 horsepower, to the cement works at Continental, Mo. In central Texas, two large steam stations were distributing energy at 60,000 volts, to a number of widely scattered cities and towns over lines totaling more than 240 miles.

In the northern part of Chile a transmission line was building to furnish energy generated by a steam station at Tocopilla on the Pacific, to the copper mines 87 miles inland and at an elevation of almost 10,000 feet above sea level. The line voltage was to be 110,000 volts, which would be reduced by transformers at the mines for the operation of machinery and for the electrolytic treatment of the low-grade copper ores found in that locality.

Engineering practice had become settled in regard to standards of construction. For all lines operating at 100,000 volts and over suspension type insulators were universally employed; and for conductors, either stranded copper or steel-cored aluminum cables were used. While a few transmission lines were built with wood poles, by far the greater number were supported on steel poles having a height of from 50 to 75 feet, according to the nature of the country traversed, and placed so as to give about 600 feet span for the conductors.

At Burrard Inlet, British Columbia, a transmission line having an unusually long span was built to carry electric energy across the inlet to North Vancouver. The line was of stranded galvanized steel wire, operated at 34,600 volts, and was supported by two wooden towers at each end with a span of 951 feet. The towers were 210 feet in height. The inlet being navigable, it was necessary to maintain the wires not less than 160 feet above high water.

ELECTRIC RAILWAYS. The year 1914 witnessed several important developments in the application of electricity to the propulsion of railway trains. In the United States there was noticeable a tendency toward increasingly higher voltages for direct-current railway operation, while in Europe a small amount of direct-current work for heavy railways was under way, the weight of engineering opinion was strongly in favor of alternating current at from 11,000 to 15,000 volts and at the comparatively low frequency of 15 cycles per second. The 3-phase alternating current system appeared to enjoy but little favor except for municipal and other light railways. The New York, New Haven & Hartford extended its overhead lines an additional 40 miles to New Haven, Conn., and was operating about one-half of its passenger and freight traffic on that part of the road by means of electric locomotives. In connection with this extension it was found desirable, owing to many complaints of inductive interference with telegraph and telephone circuits, to change the system of supplying energy to the 11,000-volt overhead wire. By installing what were known as split-phase transformers and supplying one terminal of these from feedwires at a pressure of 22,000 volts, the distribution of current over the lines between the power house and the locomotives was altered to such a degree as to greatly improve the conditions formerly complained of. The overhead conductor being connected to the middle point of the phase-splitting transformers, was, as formerly, operated at 11,000 volts, making it unnecessary to introduce any change on the locomotives, but so affecting the resultant currents in the trolley wire as to produce the desired result.



THREE THOUSAND-VOLT DIRECT CURRENT LOCOMOTIVE DESIGNED FOR CHICAGO, MILWAUKEE, AND ST. PAUL RAILWAY.

The results of the first year's operation of the Butte, Anaconda, and Pacific Railway by electric locomotives was very satisfactory. Complete substitution of steam locomotives by electric resulted in a saving of more than 25 per cent in locomotive repairs and nearly 40 per cent in round house expenses. Electric operation made it possible to run 25 per cent fewer trains, while hauling 35 per cent more tonnage than when steam locomotives were employed. At Montreal, the Mount Royal Tunnel under construction by the Canadian Northern Railway, at the close of the year, was being equipped for a direct-current overhead electric system operated at 2400 volts. The installation in addition to the 3-mile length of the tunnel was to be carried a distance of more than 5 miles outside to reach the new terminal and storage yards. The Canadian Pacific Railway was considering plans for the electric operation of the double-track Selkirk Tunnel, 5½ miles long, in British Columbia, but at the close of the year details of the installation had not been arranged. At Philadelphia, the Pennsylvania Railroad had nearly completed the work mentioned in the 1913 YEAR BOOK, of installing an overhead conductor for the electric operation of suburban trains, comprising 30 miles of line. The Norfolk and Western Railway was about to put in use a number of electric locomotives, built by the Westinghouse Company, for use in hauling 3200-ton coal trains over a mountain division in West Virginia having 2 per cent grades. These locomotives were the largest and most powerful ever built, the double units having a total tractive force of 170,000 pounds. They were designed with split-phase induction motors for alternating current supplied from an overhead conductor at 11,000 volts.

One of the most important announcements of the year was the contract made by the Chicago, Milwaukee, and St. Paul with the General Electric Company for the electrification of 113 miles of the former's main line between Three Forks, Idaho, and Deer Lodge, Mont., involving the expenditure of about $3,500,000. Locomotives to operate with 3000-volt direct current were in course of construction, and it was expected that the whole work would be finished within one year. In Switzerland the government decided to ultimately replace all steam locomotives with alternating-current electric locomotives. The work was to be spread over several years and one of the most difficult lines to operate by steam, the St. Gothard, was undertaken first. In Norway, the Riksgränsen Railway, about 87 miles in length, was equipped with electric locomotives. The capacity of this, the most northerly railway in the world, was greatly increased by the change, and the transportation of iron ore, which constituted its principal traffic, was correspondingly diminished in cost. Fifteen thousand volt alternating current was employed for the locomotives. See also RAILWAYS, *Electrification*.

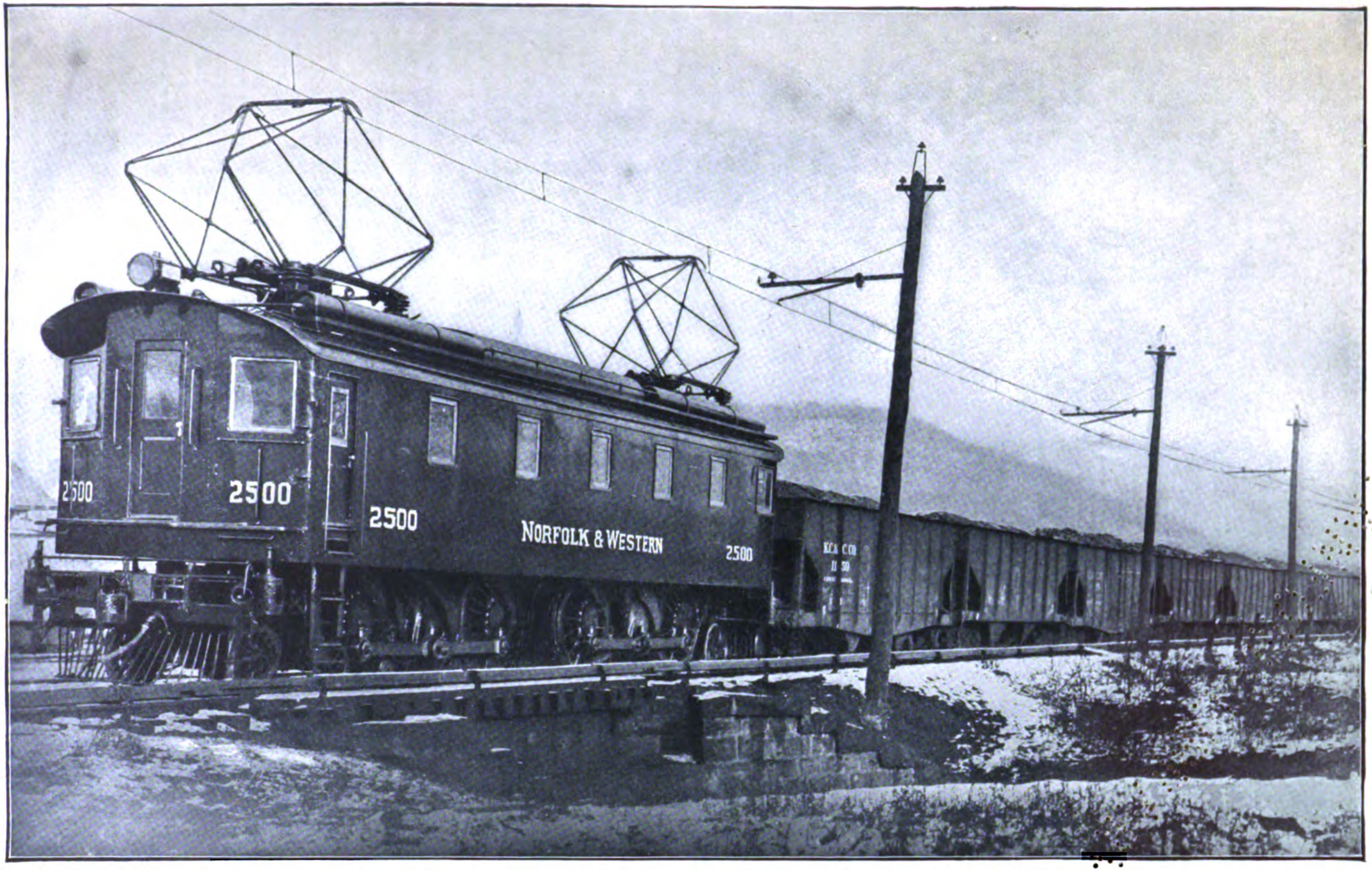
ELECTRIFICATION OF RAILWAYS. See ELECTRIC RAILWAYS and RAILWAYS.

ELECTROMETALLURGY. See CHEMISTRY, INDUSTRIAL.

ELECTRONS. See PHYSICS.

ELEVATORS. During the year 1914 an ordinance designed to reduce elevator accidents

ELECTRIC LOCOMOTIVE



WESTINGHOUSE ARTICULATED ELECTRIC LOCOMOTIVE FOR FREIGHT SERVICE ON NORFOLK AND WESTERN RAILWAY
TWO OF THE 135-TON UNITS SHOWN ABOVE CAN HAUL A TRAIN OF 45 LOADED COAL CARS WEIGHING 3250 TONS. ALTERNATING CURRENT AT 11,000 VOLTS IS SUPPLIED TO A SPLIT-PHASE SYSTEM WITH INDUCTION MOTORS OF 1600 HORSE POWER CAPACITY IN EACH UNIT

was passed in New York City, to be put into force on Jan. 1, 1915. It provided for an interlocking device on every elevator, and made it unlawful to operate any elevator otherwise. Elevators traveling 16 stories or more were to be equipped before Oct. 1, 1915, and it was estimated that there were about 150 buildings in Manhattan, which were of this or greater height. This ordinance came as a result of the large number of fatal accidents occurring at elevator gates, 207 being recorded in the five years from 1907 to 1911, of which 119 were on passenger elevators and 88 on freight elevators. The new ordinance required the entire interlocking of elevator cars and shaft doors, so that no shaft gate or door can be opened until the elevator has come to a stop and the car cannot be moved while the door is open. In the Borough of Manhattan alone there were some 10,000 elevators, with an aggregate of about 100,000 openings; this and additional provisions in the way of regulations and inspection should add materially to the safety of the traveling public.

EMDEN, THE. For exploits and capture of, see NAVAL PROGRESS, and WAR OF THE NATIONS.

EMERGENCY REVENUE BILL. See UNITED STATES, sections *Congress* and *Financial Revenue.*

EMIGRATION. See AUSTRIA-HUNGARY, *Emigration Scandal;* IMMIGRATION AND EMIGRATION.

EMMICH, OTTO VON. See WAR OF THE NATIONS.

EMPIS, ADOLPHE GEORGES GASPARD JOSEPH, called SIMONIS. A French physician and medical author, died in Paris in the early part of December, 1914. He was born in 1824. Early in his medical practice he published many clinical studies on diphtheria, irregular varioles, and other diseases; and in 1865 he won distinction by a work in which he described a clinical picture of acute miliary tuberculosis. In 1867 he published a book on the statistics of the obstetric services of the Hôpital de la Pitié and the means there taken to prevent puerperal fever. These books made prominent for the first time the problem of the contagiousness of puerperal fever, affirmed the necessity of isolating the patient so affected, and of using strict preventive measures against the disease. Empis was one of the last representatives of the French clinical school which became prominent about 1850. He was at one time agrégé of the Faculté de Médecine de Paris, and in 1895 was president of the Académie de Médecine.

EMPLOYERS' LIABILITY. Until a few years ago one of the most important phases of labor legislation dealt with employers' liability for accidents during working hours. The main characteristic of the voluminous employers' liability legislation was the gradual reduction of the common-law defenses behind which the employers had been able to shield themselves. Under the common law the employee was held to have assumed the normal risk of his employment; in case of accident due in part to his own negligence, he could not recover damages for injury; if a fellow workman was responsible for the accident causing injury or death the employer was relieved from financial obligation. Although employers' liability legislation gradually removed these defenses for the most part, nevertheless experience showed that the vast majority of working men injured in industry received no financial recompense. This was mainly due to the lack of means to carry on necessary litigation through a series of courts; but was due in part to the fact that employers transferred their responsibility to employers' liability insurance companies. Following the lead of England, therefore, 24 American States have enacted laws providing some means of definite compensation for injuries or deaths resulting from accidents to men at work without the necessity of resorting to court procedure. (See WORKMEN'S COMPENSATION.)

The only general liability laws enacted in 1914 were those of Alaska and Mississippi. Alaska provided that every employer in a business carried on by machinery should be liable for all damages to employees resulting from officers, agents, or other employees, or resulting from defect or insufficiency in machinery. The contributory negligence of the injured was declared not a bar to recovery of damages by him when his negligence was comparatively slight. Moreover, these new liabilities of employers could not be waived by any contract, insurance, relief benefit, or indemnity. Mississippi abolished the assumption of risks doctrine, except for conductors and locomotive engineers when in charge of unsafe cars or engines voluntarily operated by them.

EMPLOYMENT EXCHANGES. See UNEMPLOYMENT, *Public Employment Exchanges.*

EMPRESSITE. See MINERALOGY.

EMPRESS OF IRELAND DISASTER. See SAFETY AT SEA.

ENGINEERING. Engineering activity and progress in 1914 was influenced in no small degree by the two factors which predominated all human activity in that year, namely, the financial depression extending throughout the world and the great European War, which began in August. As a result, few important new projects were undertaken, while those under way, especially in Europe, were postponed, or carried on in a desultory fashion with the idea of providing employment rather than the ultimate completion of the work, unless it had some military importance. A number of the more important works will be found treated through the YEAR BOOK under different heads. The reader will find discussed under BRIDGES two important structures building in America, but little of importance elsewhere in the world. Under CANALS and the PANAMA CANAL the completion of important engineering works are treated, while the articles, AQUEDUCTS, WATER SUPPLY, WATER PURIFICATION, and WATERWORKS discuss progress in these fields, and especially the approaching completion of the great Catskill Aqueduct Water Supply. Some notable DAMS were building during 1914, while there were also important DOCK AND HARBOR works under construction, though naturally European work was seriously interfered with. Under RAILWAYS is recorded the curtailment in construction, and the general depression, which extended into engineering from finance and operation.

There was, however, notable TUNNEL construction in progress during the year in both continents, while rapid transit, ever demanded by the inhabitants of large cities, exhibited further progress both in Europe and the United States by the construction and extension of subway systems. More than ever MUNICIPAL GOVERNMENT was under discussion and the contributions of engineers to the efficient operation of cities and the conduct of their activities, was appreciated and discussed, as the city manager and commission forms of government depended in large part on trained municipal engineers to carry on the work. In this connection the students of municipal engineering will be interested in the work in GARBAGE AND REFUSE DISPOSAL and SEWAGE, while the various schemes for improving the FIRE PROTECTION of American cities and doing away with the deplorable wastes annually recorded in the United States and Canada merits the discussion it receives. In ELECTRICAL ENGINEERING the year showed progress rather than startling innovations. ELECTRIC RAILWAY development, DYNAMO-ELECTRIC MACHINERY, ELECTRIC LIGHTING, and TRANSMISSION OF POWER BY ELECTRICITY, all had achievements to their credit, though here as elsewhere financial conditions interfered with general progress. In mechanical engineering the further advance of the INTERNAL COMBUSTION ENGINE may be recorded, though BOILERS, the STEAM ENGINE, and STEAM TURBINE cannot be neglected, for here also were important advances. PUMPING MACHINERY involved the construction of some new large units, while marine engineering, as discussed under BATTLESHIPS, SAFETY AT SEA, and SHIPBUILDING also is entitled to a share in the record of the year. The great war brought about new problems in WIRELESS TELEGRAPHY AND TELEPHONY as well as the scientific development of this art, while in military engineering the great minds of the continent of Europe were directed towards problems, the solution of which is indicated under MILITARY PROGRESS. Likewise on the sea the war produced a number of lessons for the naval engineer, and under NAVAL PROGRESS, and especially in the discussion under SUBMARINES important engineering matters are handled. In still another department of engineering, namely, AËRONAUTICS, the war also had its effect in the latter half of the year, and this field was almost entirely given up to the use of aëroplanes and airships for the destruction of life and property, rather than their technical improvement. Thus this record, as outlined under the above and similar topics, while one of considerable progress, must be considered in the light of conditions rather than as one marked by unhampered achievement.

ENGLAND. See GREAT BRITAIN.

ENGLAND, CHURCH OF. The number of Church of England clergy in England and Wales in 1914 was, approximately, 23,000. Of these 14,750 were beneficed, and 7700 assistant curates. The revenues from church property, varying somewhat from year to year, total annually between £5,000,000 and £6,000,000. The grand total of voluntary offerings increases the church's income, roughly speaking, by between £7,000,000 and £8,000,000.

The outstanding matters of interest for 1914 centred in the discussions and deliberations that grew out of the so-called Kikuyu Controversy, which latter may be briefly summarized. The trouble arose from a conference of those representing missionary agencies—Church of England and also Nonconformist—in British East Africa; but it came to be a storm centre of conflicting opinions for the Church of England as a whole. The conference grew out of a conviction on the part of the participants of the necessity of presenting a united Christian front against heathenism and Mohammedanism, and, after recognizing agreements in certain essential points of doctrine and coming to an agreement on certain points of federation, organization, and practical action, ended in a united communion service presided over by two Anglican bishops, Dr. Willis of Uganda and Dr. Peel of Mombasa, and held in the Scots Church at Kikuyu, near Nairobi, where, as a convenient central point the Conference met. The plans and agreements of the conference, with its doctrinal and disciplinary implications and its communicating of Nonconformists, outraged the convictions of the Bishop of Zanzibar, Dr. Weston, who expressed his views in an open letter to the Bishop of St. Albans, in which he lamented the distracted condition, doctrinally speaking, of the whole Anglican Church; condemned the Kikuyu proceedings as a peril to faith and doctrine; and virtually charged the Bishops of Uganda and Mombasa with schism, if not with heresy. This letter was a brand which kindled to flame the undying embers of hostility between the High, Low, and Broad parties in the Established Church, and, in a measure, in the whole Anglican communion. Dr. Gore, Bishop of Oxford, sided, in an open letter, with the Bishop of Zanzibar against the Kikuyu Episcopal conferees, while the liberal Modernistic views found lucid and vigorous expression in *Foundations: A Statement of Christian Belief in Terms of Modern Thought*, a volume of seven essays by seven Oxford men. The Archbishop of Canterbury finally referred the Kikuyu affair to a Consultative Committee, representative of the Church at home and abroad, which met in July to consider the questions of faith and order forced to the front by the East African incident. This committee had not, at the end of 1914, made its findings public.

ENTOMOLOGY. In the United States the usual amount of work was done in economic entomology, for which reference should be made to the publications of the various State Experiment Stations and to those of the Bureau of Entomology. The Federal appropriation for the bureau was $829,420, of which $310,000 was for the gypsy and brown-tail moth investigation. This latter investigation is being conducted along five general lines, experimental work; silvicultural work; quarantine; scouting; and coöperative. Under the latter is included the shipment of parasites to Nova Scotia and New Brunswick. A gypsy moth colony has been found near Cleveland, Ohio, and the brown-tail is reported to be extending its range to the southern part of Connecticut. Mosher and Webber reported that the gypsy moth seems to be changing its food plant, is much less hardy than when it first appeared in New England, and is much more susceptible to disease. A considerable portion of Eastern New England is quarantined against these two insects, and a force of inspectors examine all lumber products sent out.

One of the legionary ants, *Eciton schmitti*, was reported as attacking the Argentine ant below New Orleans, and may help to keep it in check. No remedy has yet been found for the cotton boll weevil. The potato beetle has reached the Pacific coast, and the San José scale was reported from Nova Scotia.

Morrill, experimenting on the attractiveness of various baits for house flies, found that sticky flypaper with a slice of ripe banana in the centre was as efficient as anything for catching flies. Ten per cent formalin is about the best poison, and if mixed with a little fresh beer its attractiveness will be increased. Formalin is of little use, however, if the flies have access to water elsewhere.

In 1913, the first Associations of Economic Entomologists ever formed in those countries were started in Germany and Russia.

EPIDESMINE. See MINERALOGY.

EPILEPSY. The increasing importance assigned to the pituitary gland in its relation to epilepsy was very evident during the year 1914. Out of a great number of investigations the results of examination in one series of 95 cases may be cited. Seven of these cases were found to be pituitary tumors, and in only one of these was there any other evidence of involvement of the pituitary gland aside from the epileptic attacks. Examination is made by means of X-ray photographs of the skull and the amount of involvement of the gland is estimated by changes in its bony bed. In these tumor cases there was no local osseous thickening at the base of the skull, rather a thinning of the body of the sphenoid or the clinoid processes from pressure was found almost constantly, indicating an enlargement of the gland. In some instances there were localized areas of thickening and in 15 cases no bony alterations were found. An analysis of the latter cases showed that the epilepsy was probably due to other causes. One was a case of internal hydrocephalus, another was a victim of paresis, and three patients had been epileptic from early childhood. Further studies seem to point to the conclusion that the frequency of attacks had a closer relation to the pathological bony changes than to the length of time the disease had existed. The investigators sum up their conclusions as follows: They found a condition of local acromegaly in essential epilepsy, which they believe can only be due to venous stasis. This stasis can only come in one way, namely, from pressure within the box-like structure that contains the pituitary gland. The evidence appears to be in favor of a crippling of this gland by pressure. Hypopituitarism would consequently be the result. It is known that epilepsy accompanies this condition. Therefore, it would appear that so-called idiopathic or essential epilepsy is due to mechanical injury of the pituitary gland. (See PITUITARY GLAND.)

Studies concerning the relation between epilepsy and tuberculosis were made by Shaw, who finds that the epileptic is considerably more likely to die of tuberculosis than the nonepileptic. An analysis of 100 deaths taken seriatim show that tuberculosis was the cause in 33 cases. A similar analysis of 290 deaths among nonepileptics showed 24.1 per cent due to tuberculosis, a difference of nearly 10 per cent. Shaw tested 60 epileptics with tuberculin and found that 50 reacted positively, whereas the nonepileptic in the same institution were 50 per cent positive. He also noted that the epileptics were peculiar in the depression of temperature which ensued after a comparatively small dose of tuberculin. It is contended by Shaw that epilepsy may be an evidence of tuberculous infection in childhood, affecting most probably the bronchial glands at first, and that the convulsions are due to either reflex irritation thus produced, or to the resulting toxemia acting on an unstable nervous system, whether inherited or acquired. He contends further, that the recurring seizures not only establish a vicious habit in the nervous system, but also bring about autoinoculation with tuberculosis which tends to keep the tuberculous process in check; so that, instead of a fatal termination, we have epilepsy as a result. He advises a careful search for tuberculous foci in children as soon as epileptic fits develop.

Puncture of the corpus callosum had been practiced by a number of German surgeons in cases where intra-cranial pressure seems to exist. The object of this operation is to establish a connection between the cerebro-spinal fluid contained in the lateral ventricles with that circulating in the spinal canal and subdural spaces, thus equalizing pressure. This procedure has already been practiced in hydrocephalus and consists in trephining in a small opening in the vertex of the skull and thrusting a suitably bent trocar between the cerebral hemispheres until it passes through the corpus callosum. The brain is not injured and the operation does not entail nervous shock. It has even been done under local anæsthesia.

The Connecticut State Colony for Epileptics was opened at Mansfield on May 15, 1914. The colony is located on the summit of a slope overlooking the Willimantic River, is 500 acres in extent, and will accommodate 80 patients. At present in 34 States (including the District of Columbia) epileptics are cared for in public and private hospitals, sanatoriums, institutions for incurables, pauper asylums, and homes. State hospitals or colonies established solely for the purpose of treating and caring for epileptics are nine in number, viz.: Connecticut, Indiana, Kansas, Massachusetts, New Jersey, New York, Ohio, Texas, and Virginia. Iowa was about to establish a model State colony at Woodward. Other State institutions in which epileptics were cared for existed in Michigan, Minnesota, Missouri, North Carolina, and Wyoming. The following States in 1914 had laws which wholly or in part prohibit the marriage of epileptics: Connecticut, Indiana, Kansas, Michigan, Minnesota, New Jersey, Ohio, Utah, and Washington. The twentieth annual report of the Craig colony for epileptics at Sonyea, N. Y., gives the daily average population during 1914 as 1434, with a net per capita cost for maintenance of $169.43. During the year 96 patients were discharged and 144 died. Only four of those discharged had recovered from the disease. Since the opening of this colony in 1896, 56 cases have been discharged as recovered, 514 as improved, 635 as unimproved, and 1090 died. The total number treated was 3866.

EPISCOPAL CHURCH. See PROTESTANT EPISCOPAL CHURCH.

ERITREA. An Italian colony on the African coast of the Red Sea, extending from Cape Kasar on the north to the Strait of Babel-el-Mandeb on the south. The area is estimated at 45,800 square miles, and the population at 279,000. Asmara is the capital and Massaua the chief port. There is abundant pasture, and camels, oxen, sheep, and goats, and the products derived therefrom, are the main articles of trade. Salt is an important product for export to Abyssinia, where it serves as a monetary currency. Pearl fishing is carried on, and gold is mined near Asmara. The imports in 1911 were valued at 18,845,118 lire; exports 9,371,802;

transit 5,234,262. Tonnage entered, 191,101. There are 74 miles of railway. An extension to Keren and another to Agordat are under construction. The budget for 1912-13 balanced at 13,008,004 lire. The colony is administered by a governor.

ETHICS. See Philosophy.

ETHIOPIA. See Abyssinia.

ETHNOGRAPHY. See Anthropology.

ETHNOLOGY. See Anthropology.

EUGENICS. The art of improving the human race through better breeding advances in four ways: first, by reëxamination of partial or erroneous theories; second, by scientific discoveries in biology; third, by increase in knowledge of how to apply those discoveries; and fourth, by the popularization of information. During the past year progress has been made in all of these directions. Among scientists, at least, the former belief that the laws of heredity are relatively simple has been steadily undermined. Especially with reference to their application to man is it held that more knowledge of biological laws is needed. For example, certain discussions at the second annual meeting of the Eugenics Research Association held at Columbia University in June, 1914, brought out the fact that much more study of the mental traits of individuals and their modes of inheritance is desirable before any extensive practical programme is adopted. Tests for intelligence require closer standardization. Proof must be forthcoming as to whether in reality the unit characters found by Mendelians in physical traits occur also in the mental characteristics of man. With respect to these and many other scientific phases of the subject, investigators are becoming far more cautious than they were. As Dr. Saleeby remarks in a *Forum* article (April, 1914) on "The Progress of Eugenics": "Whilst we know much more than we did 10 or even 5 years ago, we know much less than we thought we did." Scientific investigation, however, is proceeding with vigor. One of the most interesting researches is that of Dr. Eastabrook in tracing the famous "Jukes" in all directions. He has already found some 2100 members of this famous family and a supplement to Dugdale's study of these people will probably soon appear. The Surgeon-General of the United States Public Health Service is a member of the Educational Committee of the American Genetic Association and is directing various studies of immigrants at Ellis Island from a eugenic standpoint. Mendelism has even been explained in the pages of the *Congressional Record.* Contributions to both scientific and popular phases of the subject have been appearing with great frequency. For example, the *Proceedings of the First National Conference on Race Betterment* held at Battle Creek, Mich., in January, 1914, contain several papers of scientific merit, as well as many of a more popular character on this subject. In March, 1914, the Galton Laboratory of the University of London issued an important report by Prof. Karl Pearson on *The Handicapping of the First Born.* In February the Eugenics Record Office at Cold Spring Harbor, L. I., published Bulletin No. 11, *A Reply to the Criticism of Recent American Work* [*in Eugenics*], by C. B. Davenport and A. J. Rosanoff. Among recent books may be mentioned: H. E. Walter, *Genetics: An Introduction to the Study of Heredity* (New York, 1914); R. C. Prennett, *Mendelism* (revised and enlarged edition, ib., 1913); *Eugenics: Twelve University Lectures* (ib., 1914); Dr. H. H. Goddard, *Feeble-Mindedness: Its Causes and Consequences;* and F. G. Jewett, *The Next Generation: A Study in the Physiology of Inheritance* (ib., 1914), a book practically valuable for youthful students. Among magazine articles that of H. A. Miller in the April *Popular Science Monthly* on "The Psychological Limitations of Eugenics" is probably of most importance. An extensive bibliography—*Eugenics and Social Welfare*—has been published recently by the New York State Board of Charities (Albany). See Marriage and Divorce, *Eugenic Marriages.*

EVANGELICAL ASSOCIATION. A religious denomination having its greatest strength among the German-born citizens of the United States. Its doctrine is a modified Methodism. Communicants are found in nearly all parts of the northern section of the United States and Canada, but there is also considerable strength in the West and South. The denomination chiefly carries on missionary work among the Italian immigrants. In 1914 the body numbered 111,702 communicants, 1644 churches, and 1014 ministers. The church is divided for administrative purposes into 24 districts. In the Sunday schools there are about 175,000 pupils. The young people are organized into the Young People's Alliance, which numbered about 50,000. A publishing house is maintained in Cleveland, Ohio, and there are several philanthropic institutions and hospitals in Chicago, Philadelphia, and cities throughout the Middle West. The leading educational institution is Northwestern College, at Naperville, Ill.

EVOLUTION. See Carnegie Institution.

EXHIBITIONS, Art. See Painting and Sculpture.

EXPERIMENTAL PSYCHOLOGISTS, Association of. See Psychology.

EXPLORATION. (For Arctic and Antarctic exploration, see Polar Research.) Apart from the polar regions there have been during the past year no discoveries of unknown lands covering extended areas or of unusual popular interest. The comparatively small and steadily decreasing areas of unexplored regions lessen opportunities for important geographic additions through field-work. Explorative aims are materially and radically changing. The tendency is towards scientific surveying of regions illy known, of compilation and correlation of scattered data, and especially in the evolution of such phases of geographic knowledge as facilitate commercial exploitation, and favor colonial expansion. Of 16 memoirs of the British Association in 1913 only two covered regions hitherto unknown.

Africa. In this continent original discoveries are largely due to the operations of boundary commissions, which bring to light unknown native tribes, usually of minor importance, and furnish economic data as to fields of commercial value. Among fruitful acts of such commissions are the completion of the following boundary demarcations: The Anglo-French frontier from the Gulf of Guinea to the Niger; the Sierra Leone-French Guinea; the French-Kamerun, 1912-14, in the Tchad region; the Belgian Congo-Portuguese boundary; and the frontier between British Nigeria and the German Kamerun. While all of these commissions have contributed valuable data as to the fauna, flora, and natives of these regions, the last named, under Captain Nugent, covered the least known and most mountainous frontier of west Africa. The Benue River and its three great southern tributaries do not become navigable, even for canoes, until near the points where these streams cross the boundary into Nigeria. Nine-tenths of the zone of this boundary are occupied by the Dakka and Chamba pagans. A tiny, active folk, much resembling monkeys in appearance, they are usually in a state of nudity. They are agriculturists, live as independent communities in grass or mud huts, and are often at war. The French-Kamerun commission discovered in the luxuriant equatorial forest-belt Pahouiñe tribes, while to the north of the forest dwell the Bagas and Yangheres of whom almost nothing was known.

Of late geographic discoveries perhaps the most important is the absorption of the Uaso River by the Lorian swamp, ascertained by I. N. Dracopoli in his dangerous journey across the unknown parts of Jubaland to explore the mountains and lakes of the Dera region, British East Africa. G. F. Archer's journey along the frontier of Southern Abyssinia, to the southeast of Lake Rudolf, disclosed the crater lake of Marsabit, 4700 feet above the sea, with perpendicular walls of 300 feet. In the same region Capt. C. N. French ascended Mt. Kulai, which is rent in twain by a wonderful rift 300 feet across and 3000 feet deep. In the Libyan desert Harding King explored the extensive depression of Farafra, and the oases of Kairowin and Bu Munger, while Dr. E. Banse explored the regions adjacent to the oasis of Siwa. The Rohan-Chabot expedition returned in 1914 from its two years of exploration of Southeastern Angola and of the Kunene basin, Rhodesia. Most interesting was the discovery of the Kunene cataract where the upper river plunges 197 feet down a narrow gorge of granite. The expedition studied carefully the fauna, flora, and natives of the regions. African ethnology has received much attention in works by Bates on Eastern Libya, Rache on German East Africa, Tremearne on the Hansas, and Weeks on the Congo Bakongos. Unknown Morocco is being scientifically explored by France. Among others M. de Gironcourt is now investigating the agricultural possibilities in the regions around Mazagan, Safi, and Abda.

Asia. As in recent years the activity of explorers has been largely applied to the unknown areas of the Tibetan and Mongolian highlands. The deserts of Central Asia, with their involved problems of geography and archæology, are now being explored for the third time by Sir Aurel Stein. The extent of his geographic work is indicated by the recent completion of 94 maps by the Survey of India—each map of an area of one degree of latitude by one degree of longitude—of portions of Chinese Turkestan and Kansu. Equally important and successful have been his archæological discoveries of treasures preserved for centuries by the sands of the Gobi desert, and covering the period from 50 B.C. to 900 A.D. Among other Asiatic relics he found about 2000 Chinese documents, relating to the local administration, history, literature, and social life. The translations by Chavannes (Oxford, 1913), accompanied by facsimiles of the more important originals, shed valuable light on the past of central Asia. Stein's third journey (1914) furnishes similar results. Following an unexplored route through the Indus Kohistan, and across the Hindu Kush ranges, he reached the Lob Nor region. Through excavations of sand-buried villages, hitherto unknown, northeast of the terminal lagoons of the Tarim, interesting discoveries were made. From them Stein surmised that these settlements mark the route (later traced by him), over which the Chinese first established trade intercourse with central Asia and the distant West. Chinese records, on wood, show that as early as 120 B.C. a thriving silk trade began.

Among the loftiest peaks of Himalayan Karakoram, Dr. and Mrs. Workman, continuing their explorations, have disclosed unknown portions of the Siachen glacier and of its system, the greatest in Asia. They also discovered Mt. Queen Mary, 24,350 feet high. Dr. de Filippi explored the Remo glacier and adjacent portions of the Karakoram watershed. The glacial basin is of unexpected size and importance, while the watershed differs fundamentally from that shown on current maps. On the northeastern frontier of India work has progressed. Pritchard and Morsehead discovered immense gorges, with falls, on the Taron River, which proves to be a tributary of the Irawadi. Kingdon Ward crossed the Chungtien plateau to the upper reaches of the Kinsha Liang, where he obtained data as to the Lisu, the Lutzu, and of the Kintsu dwarf natives which live near the sources of the river. A British expedition entered the Aha foothills, from Assam, where the Membas occupy hitherto unexplored regions. The source of the Bhareli River, farther northeast than now charted, is from snowy peaks over 23,000 feet high. Its valley is occupied by the Daphlas, probably the most numerous tribe on the frontier.

In western Asia material inroads have been made on the unknown regions of Central Arabia. M. Beneyton's surveys for a railway in Yemen, between Hodeida and Sanaa, discloses the country by a route that skirts the Serat range, via Tais, Yerim, and Dharmar. The axis of the Yemin plateau, from 4000 to 10,000 feet in elevation, is a continuous line of craters, favored by a mild climate. Crops grow by irrigation, as the rivers are essentially torrents which reach the sea in flood season only. Captain Leachman passed through parts of Central Arabia in a desert journey of 800 miles from Damascus to Ojair, on the Persian Gulf. His route was via the wells of Hazil and Leina, Kusaiba, Boreida, and Riadhl, the capital of Southern Arabia. He was not permitted to enter the great, unexplored southern desert. Captain Shakspear's route, in 1914, from Koweit, Persian Gulf, to Suez took him over an unknown country between Jauf el Amir and Boreida.

North America. The demarcation of the Alaskan-Canadian boundary from Mt. St. Elias northward to the Arctic Ocean, along the 141st meridian of west longitude, is completed. This work, done by the Joint Boundary Commission, involved accurate surveys of regions not only unknown, but also of such ruggedness and remoteness as forbid their being traversed for other less important purposes. Geological and biological exploration, in coöperation with the demarcation, revealed forest areas of economic value, while potential mineral resources are now made known. Especially interesting is the mapping of the vast ice-fields between St. Elias and Mt. Natazhat, first reported by the Duke of the Abruzzi. In continuance of its Alaskan work by the U. S. Geological Survey in 1914, engineers Sargent and P. S. Smith surveyed parts of the Kuskokwim watershed. They explored the region from Lake Clark westward to the Kuskokwim Valley, and examined the southwestern extension of the Alaskan range, covering a previously unknown territory about 150 miles wide. The survey through its engineer Bagley and geologist Chapin also explored the region between Copper River and the headwaters of the Susitna River. Starting from Knik they followed the Matanuska River to Chickaloon and thence northwest to the Susitna. Later they explored the region between the headwaters of the Matanuska and the Copper. The Canadian Geological Survey has in the field, under C. Camsill, an expedition to explore the fauna, flora, and native life in the unknown portions of the Athabasca region between Black Bay and Christie Bay, Great Slave Lake. Other field parties are exploring the continental divide, near the Alaskan boundary, and along the eastern edge of the St. Elias range.

SOUTH AMERICA. Dr. W. C. Farabee in a journey from the Amazon Valley to Georgetown, B. G., crossed and explored some of the least known districts on the borders of Brazil and Guiana. Among the natives were many tribes of the Arawak and Carib stock which had never before seen white men. The National Geographic Society-Yale University Peruvian expedition, 1914–15, has commenced a geographical exploration of the fauna, flora, glaciers, etc., of the Coderilla Vicamba, a snow-capped range of Southern Peru, and also of the archæological history of adjacent regions.

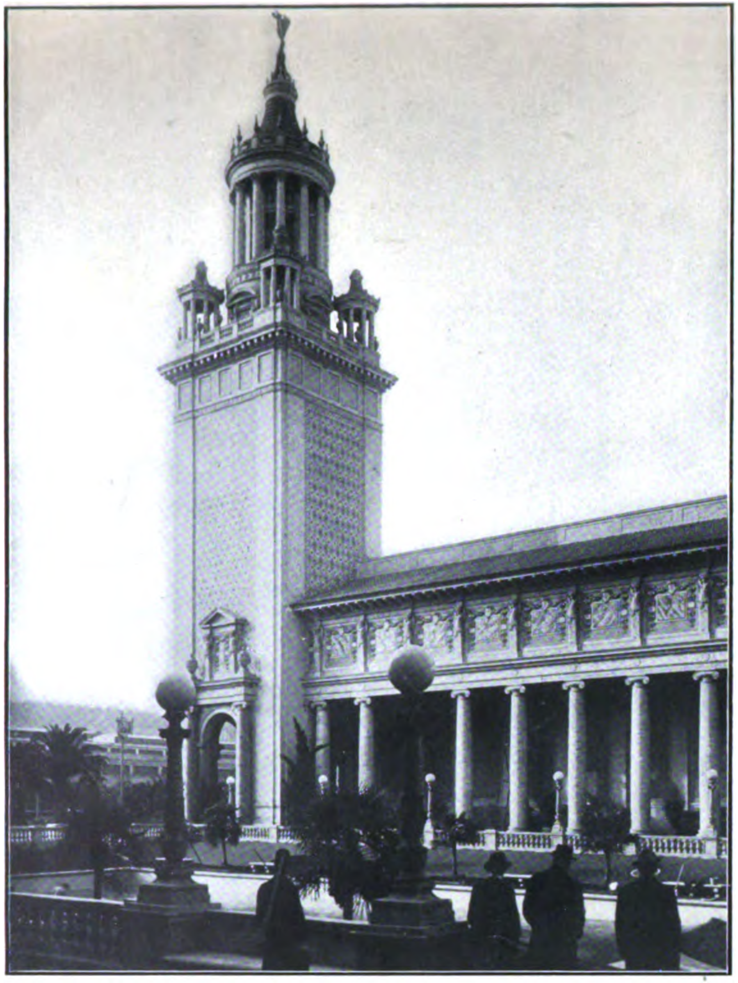
The most notable exploration in South America in 1914 was done by a party headed by Theodore Roosevelt, in the navigation of a river—now called by the Brazilian government Rio Téodoro—of which far the greater part had never been visited. It proved to be an affluent of the Madeira, which in turn is a southern tributary of the Amazon, and is about 1500 kilometers in length. Although very tortuous, the general course of Rio Téodoro is due north from the 13th to the 6th parallel of south latitude, between the 60th and 61st meridians of west longitude. It runs through a rugged, densely wooded country, uninhabited by man and almost devoid of beasts. The voyage, interrupted by many portages, involved a journey of 750 kilometers, and lasted two months, from Feb. 27 to April 26, 1914. The great number of portages around unnavigable rapids, some thirty in all, with scarcity of game, limited food, fever conditions, and two casualties, made the journey not only one of exhausting hardships and of great privations, but also one of serious danger. While the stream was known as the Aripuanan for some 200 kilometers up from the mouth, the upper reaches of the Rio Téodoro for 1000 kilometers are a new discovery.

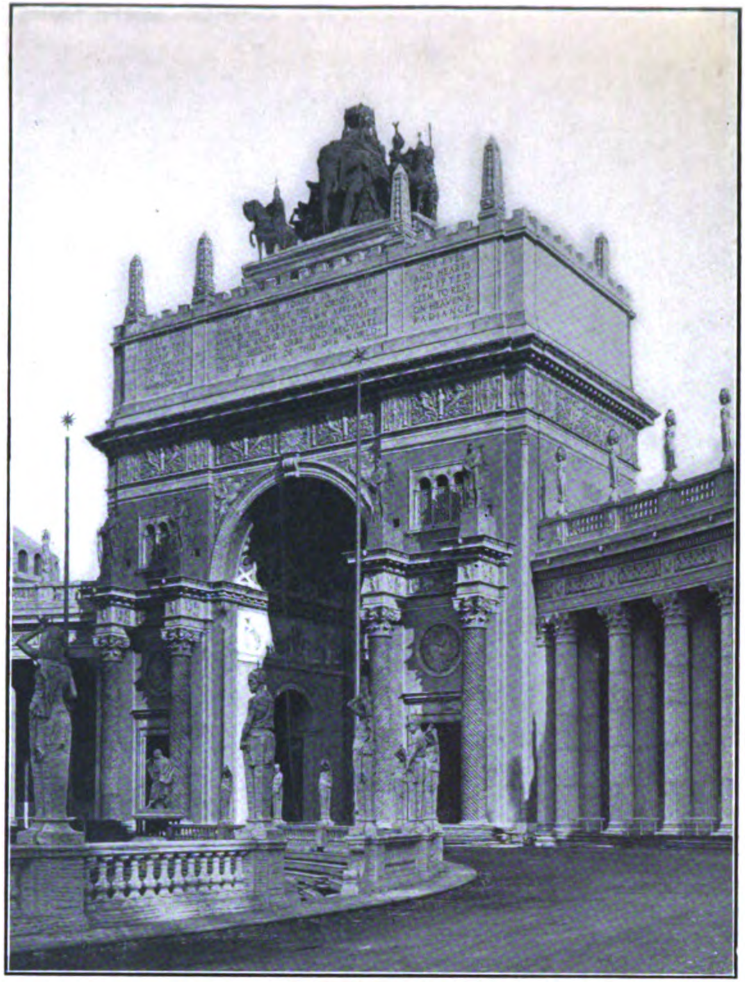
OCEANOGRAPHY Extended efforts are now being made in the exploration of the oceans of the world. Observations of the depths, currents, and winds are supplemented by scientific investigation of deep-sea conditions and marine life, especially of phenomena connected with the breeding, growth, and migrations of edible fishes. The vast importance of this work led to the organization of a Permanent International Council, and the explorations of the Bureaus of the American Department of Commerce are wisely conducted along lines harmonious with the operations of other nations. In 1914 the U. S. Coast and Geodetic Survey, coöperating with the Bureau of Fisheries, began an oceanographic investigation on the eastern coasts of the United States. The cruise of the steamer *Bache* resulted in such collections of marine-life—especially of plankton, including lectocephali and larval fishes—and observations of their sea-environment, as throw much light on the biological and physical conditions in the Gulf Stream and in the western Atlantic, on which ultimately depends the prosperity of the great fishing industries of the eastern coasts of America. The most important hydrographical discovery was the existence in the Gulf Stream, between Cuba and the Great Bahama Bank, of two distinct oceanic rivers, superimposed one above the other, flowing in opposite directions and at about the same rate of speed.

Another economic exploration was the survey of the great oyster bars of the upper Chesapeake Bay, by the State of Maryland, through the coöperation of the U. S. Coast and Geodetic Survey and the Bureau of Fisheries. This was completed in the early part of 1914 by the publication by the Coast and Geodetic Survey of a summary with attached charts. The completion of this survey is of considerable economic importance, as it indicates how the undeveloped, State-owned oyster beds of more than 500,000 acres, having a present physical value of $20,000,000, can be so increased by wise legislation and proper management that their ultimate value will be $100,000,000. The failure of fish food products to proportionally increase with the population of the world makes of noteworthy importance such biological explorations.

The Bureau of Fisheries has continued its oceanic explorations of biological and physical conditions in relation to fish life. During 1914 such investigations have been pursued in Chesapeake Bay, off the coasts of Nova Scotia, New England, and of North Carolina, where important collections of larval fishes were made. Among late oceanic discoveries of importance made by that bureau may be mentioned in the Atlantic the extensive and productive banks of sea-scallops, extending southwestward from the east end of Long Island to the capes of Virginia, about thirty miles offshore. In the Pacific, off the coast of Oregon, were located hitherto unknown fishing banks, where a lucrative halibut fishery has already been established.

On the occupation of the Philippine Islands by the United States, large regions of the islands and vast areas of the adjacent seas were unexplored. The systematic survey of this archipelago, commenced in 1901 with active financial support of the Philippine government, has been unceasingly pursued by the U. S. Coast and Geodetic Survey. The results now appear on 130 navigational charts, covering about two-thirds of the unknown seas. The largest unsurveyed areas comprise the Sulu Sea and waters north of Luzon. The various Philippine surveying organizations, through their land explorations, are contributing much topographic and economic information. Supervised by Coast Survey offi-





PANAMA-PACIFIC INTERNATIONAL EXPOSITION

COURT OF PALMS SHOWING ITALIAN TOWER AND SECTION OF COLONNADE OF PALACE OF EDUCATION

WEST SIDE OF ARCH OF THE RISING SUN WITH SCULPTURE ABOVE "THE NATIONS OF THE EAST"

cers, these notable additions to geographic knowledge are in course of publication by the Insular government in a series of maps.

GENERAL. In British Papua, Australasia, Judge Murray, in a journey of 530 miles up the Fly River, discovered a hostile, unknown native tribe wearing a rattan, cuirass-shaped armor, an effective defense against arrows. Around Lake Murray was another tribe which covered themselves with various brilliant pigments.

Cartography is no longer confined to the land and sea, but in a way has invaded the domain of the air. Among the many excellent aëronautical maps published in Europe, there may be mentioned as illustrative those of the Aëro Club of France. At present they have special importance for use in military operations. Each sheet includes an area of one degree each of latitude and longitude. Railways, woods, tramways, rivers, canals, etc., are shown by suitable colors and symbols. Objects of special form or prominence—such as heights, buildings, aërodromes, landing places, etc.—are clearly indicated.

The magnetic survey of the ocean steadily progresses under Prof. L. A. Bauer, Carnegie Institution. In the non-magnetic ship *Carnegie*, voyages of 111,000 miles have been made, covering all oceans except the Antarctic. While the errors in current charts of compass-directions are usually found not to exceed 2°, they ranged from 4° to 6° in the Indian Ocean.

The London Maritime Conference, realizing the serious dangers arising from a lack of definite knowledge of the polar ice-drifts in the North Atlantic, urged the establishment of a summer explorative and patrol service along and adjacent to the northern transatlantic steamer routes. In 1914 the U. S. Revenue Service by constant patrol investigated the character, quantity, and location of such fields and bergs, disseminating this and other maritime information by wireless to coast stations and to steamships en route.

EXPLOSIVES. See CHEMISTRY, INDUSTRIAL.

EXPOSITIONS. There were no expositions of importance held in the United States during the year 1914. Two expositions whose progress has been followed in previous volumes of the NEW INTERNATIONAL YEAR BOOK, and which will open in 1915 deserve mention.

INTERNATIONAL PANAMA-CALIFORNIA EXPOSITION. (See YEAR BOOK, 1911, p. 247; 1912, p. 216; and 1913, p. 236.) This exposition which will be held in San Diego, Cal., from Jan. 1, to Dec. 31, 1915, celebrates the completion of the Panama Canal. It occupies an area of 618 acres in Balboa Park, a public playground that borders on the business centre of San Diego. The Exposition grounds are entered over Puente del Cabrillo, a bridge 135 feet high and 900 feet long, that crosses a deep canyon and serves as an approach to the walled city in which the buildings are in the Spanish Colonial style of architecture, suggesting the Alhambra, the old Mexican cathedrals, and the older homes of the Moors. Towers and minarets, white walls, and red-tiled roofs rise through a profusion of plants, shrubs, palms, and flowers. A high wire fence, 4 miles long, covered with native flowering vines, surrounds the grounds.

On passing through the entrance arches, the California State Building, with its massive cathedral-like dome and tower, commands attention, while opposite is a Roman building in which are shown the valuable exhibits of ethnology and archæology. Eight other buildings, each an exact replica of some historic palace of Spain or Spanish-America, with rounded arches and connecting colonnades, come next on the tree-lined Prado. They are devoted to the exhibits pertaining to home economy, arts and crafts, science and education, foreign arts, botany, commerce and industry, varied industries, and food products. Besides the foregoing there are special buildings containing the exhibits of Sacramento Valley, San Diego County, San Joaquin Valley, and Southern California counties; also the following State buildings: Arizona, Colorado, Kansas, Ohio, Nevada, New Mexico, Utah, and Washington, as well as one for the exhibits from Brazil.

The amusement features are grouped along a narrow street called the Isthmus on which there are 60 buildings. Beyond these in the extreme northeastern end of the grounds is the "Painted Desert," a reservation of six acres surrounded by an adobe wall and cedar stockade. The space inside consists of an open plain divided by a high mesa on which are cliff dwellings, while in the foreground the Pueblo Indians have their homes, and in the background are the wandering tribes. The entire rock formation is colored like the real Painted Desert in Arizona. The industries of the southwestern aborigines, such as pottery-making, blanket-weaving, making of silver ornaments, and other home occupations of the Indians may be seen in active operation. The principal exhibits in this Exposition are those pertaining to the archæology, ethnology, and natural history (especially botany), of the southwestern part of the United States.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION. (See YEAR BOOK, 1912, p. 216; and 1913, p. 236.) This exposition, which will be held in San Francisco, Cal., from Feb. 20, to Dec. 4, 1915, celebrates the opening of the Panama Canal. It covers an area of 625 acres on Harbor View, a tract of land 2 miles long on the south front of San Francisco Bay, just inside of the Golden Gate and within fifteen minutes' streetcar ride from the centre of the city. The main buildings, eleven in number, are in the Spanish Colonial or Mission style of architecture, and are grouped around a central Court of the Sun and Stars, one of the most magnificent features of the Exposition. The main entrance to the grounds leads to the Tower of Jewels, the outline of which will be defined by thousands of hand-cut glass prisms so hung that the least atmospheric disturbance will cause them to flash and scintillate in a thousand different tints and colors. On the western end of this court is the Triumphal Arch of the Setting Sun surmounted by the group symbolizing the Nations of the East, while on the east is the Arch of the Rising Sun surrounded by the group symbolizing the Nations of the West. To the west are the Horticulture Palace, the Education and Social Science Palace, Food Products Palace, Agriculture Palace, and Liberal Arts Palace, flanked on the extreme left by the Fine Arts Palace. To the east of the entrance is Festival Hall, Varied Industry Palace, Mines and Metallurgy Palace, Transportation Palace, and Manufactures Palace, this group being flanked on the extreme east by the Machinery Palace. The State Pavilions, beginning with California in, the east, extend along the water front to the west of the main group of buildings, and south of them are the Foreign Pavilions, while still to the west are the Live Stock Exhibit and the Athletic Field. The amusement features are in the eastern extremity of the grounds, grouped along a thoroughfare called The Zone. Over 250 groups and hundreds of individual pieces of statuary will adorn the grounds, while the flower display will be superior to that of any previous exposition. Nearly 40 foreign nations have sent exhibits, and 46 States have arranged for participation, while conventions and congresses in the hundreds have promised to meet in San Francisco during the Exposition.

Among foreign expositions worthy of mention are the following:

LYONS. An International Modern City Exposition was held in Lyons, France, from May 1 to November 1, at which the modern city was shown from every viewpoint, including street and park systems, waterworks, sewerage, hospitals, sanitary dwellings for the poor, and the fight against tuberculosis, alcoholism, and other unsanitary and social evils found in crowded populations. New York, Chicago, Philadelphia, and Cleveland were among the American cities that exhibited.

LONDON. An Anglo-American Exposition was held in Shepherd's Bush, London, from May to October, to celebrate the century of peace and the progress of the arts, sciences, and industries of the United States and the British Empire. The first £40,000 of the net profits of the exposition were set aside to be paid to the British-American Peace Committee for the foundation of scholarships and prizes in connection with educational, social, and commercial economics in both countries. At the close of the Exposition the British exhibits were to be sent to the Panama-Pacific Exposition to be held in San Francisco in 1915.

LEIPZIG. An International Exposition of the Book Industries and Graphic Arts was held in Leipzig, Germany, from May 6 to October 15. The grounds covered 20 acres and there were more than 20 buildings devoted to exhibition purposes. All of the industrial and manufacturing processes of printing and book-making were shown. The American Library Association and the Library of Congress were the only two American exhibits. It was by far the largest and most comprehensive exhibition of the kind ever held.

CHRISTIANIA. An exposition was held in Christiania, Norway, beginning on May 15, commemorative of the centenary of Norwegian independence from Denmark.

Among expositions announced for the future are:

PANAMA. The National Exposition of Panama, which has for its purpose the celebration of the 400th anniversary of the discovery of the Pacific Ocean by Balboa and the completion of the Panama Canal as well, was to have been opened on Nov. 3, 1914, but that event has been postponed until March 13, 1915.

MARSEILLES. A Colonial Exposition is expected to be held in Marseilles, France, during 1916.

SEVILLE. A Spanish-American Exposition will be held in Seville, Spain, beginning on Jan. 1, 1916, in celebration of the completion of the Alfonso XIII Canal. This exposition, which was postponed from 1915, has made provision for three buildings of permanent construction as follows: Palace of Fine Arts, Palace of Decorative Industries, and Royal Pavilion.

BARCELONA. An International Exposition of Electrical Industries will be held in Barcelona, Spain, in 1917.

MISCELLANEOUS. Other important gatherings during the year were: International Exposition of Stone, held in Milan, Italy, from April to June; German Artisans' Exposition, held in Cologne, Germany, from May to October; International Exhibition of Home Manufactures and Commercial Products, held in Bristol, England, from May to October; Exposition of Hygiene, held in Stuttgart, Germany, from May 15 to October 31; Exposition of Machinery, Apparatus, and Supplies of all kinds used in Wine Production, Brewing, and Distilling, held in Budapest, Hungary, from May 24 to July 6; International Exposition of Marine Motors, held in Boulogne-sur-Mer, France, from June 15 to September 30; Exposition of Electrical Appliances, held in Frankfort on the Main, Germany, from August 15 to September 6; Colombian Industrial and Agricultural Exposition, held in Cartagena, Colombia, from November 11 to December 31.

FABIAN SOCIETY. See SOCIALISM, *Great Britain*.

FACTORY INVESTIGATION COMMISSION OF NEW YORK. This commission, created by the Assembly of 1911, has been continued by the succeeding legislatures and instructed to report in February, 1915. The commission included in its membership Senator Robert F. Wagner, the chairman; Samuel Gompers, president of the American Federation of Labor; Mary E. Drier, president of Women's Trade Union League of New York; Abraham I. Elkus, who acted as chief counsel; and members of the State Assembly. Very extensive work has been done by the commission and startling discoveries have been made. Special investigations into the fire risks of factories have been carried on and bills have been passed on this matter, at the suggestion of the commission. There has, however, been much opposition on the part of the factory owners to the vesting of inspection powers in the hands of the Department of Labor. Industrial accidents, child labor, home work, and the better organization of the administrative machinery for carrying out labor laws have been among the subjects dealt with by the commission.

WAGES. Remuneration in several occupations were found to be exceedingly low. A study of the wages in confectionery factories and paper-box industries revealed the fact that in the former more than one-half the men received less than $10 a week; half the women less than $6; and more than two-thirds of the girls below 18 less than $5.50. In the paper-box industry conditions were found to be quite as bad. A much more extensive investigation disclosed that of 104,000 employees, one-eighth received less than $5 per week, while only one-sixth had $15 or over. Secured from pay rolls of several hundred stores and factories throughout the State, these figures represent what is probably the earnings during the busy seasons, but which are higher than average wages throughout the year because of slack work and disability. Detailed studies of four industries were also reported on and showed similar results. A minimum wage was

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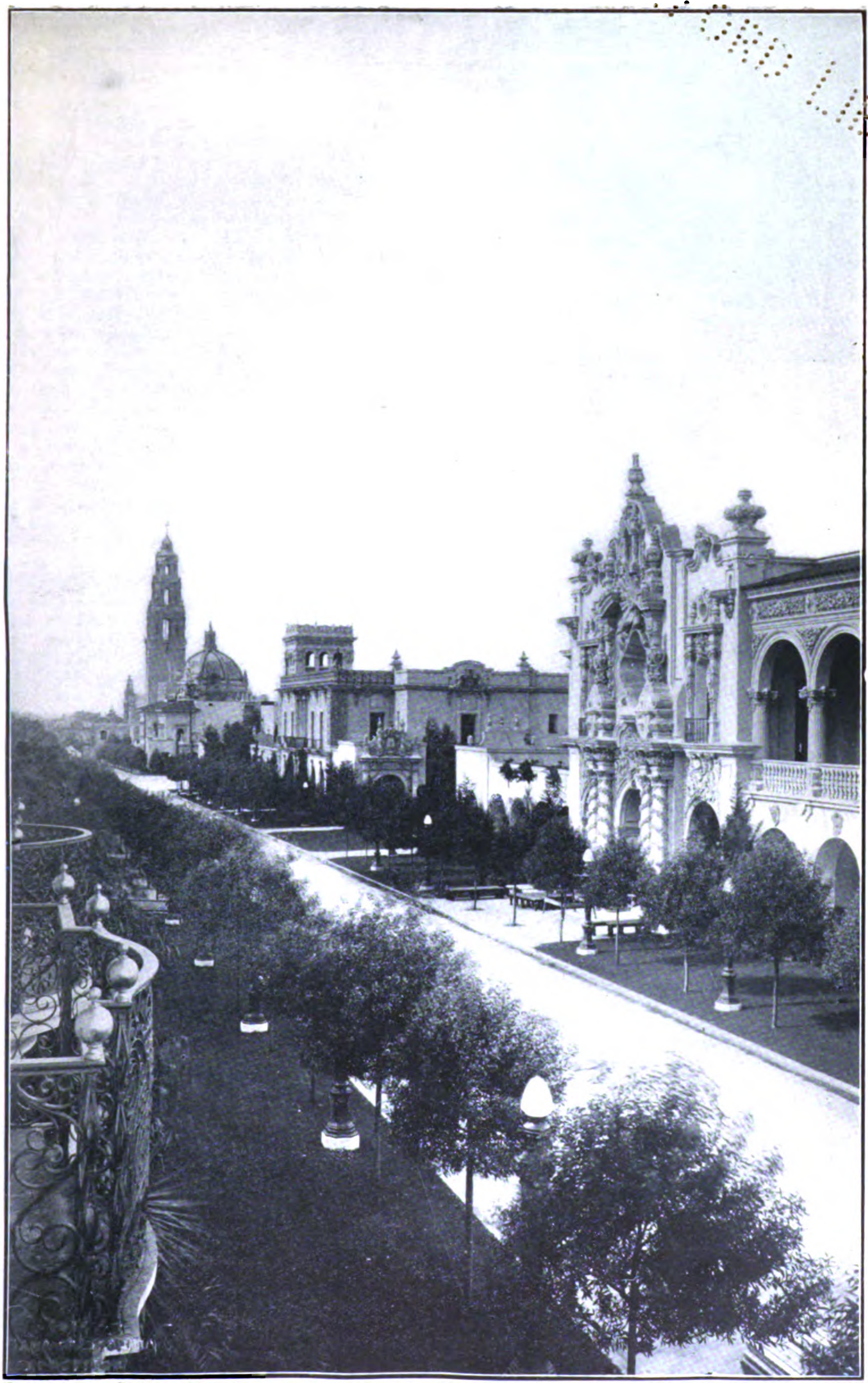


© 1914 Panama-California Exposition

PANAMA-CALIFORNIA EXPOSITION, SAN DIEGO

LOOKING WESTWARD IN EL PRADO

urged before the commission by many as a remedy for these evils. The homes of many working girls were investigated and, although too few to permit statistical conclusions, many interesting discoveries were made. A report on the minimum wage in the United States and foreign countries was also made to the Legislature.

FAHNESTOCK, Harris Charles. An American banker, died June 4, 1914. He was born in Harrisburg, Pa., in 1835, and received an academic education. At the age of 16 he entered the Harrisburg National Bank and rose so rapidly, that by 1860 he had achieved a national reputation and in the following year became associated with the firm of Jay Cooke & Co., in Philadelphia. During the war, when this firm of bankers was the chief financial mainstay of the government, he took a prominent and active part in giving advice and assistance. In 1866 he removed to New York as the head of the New York house of this firm. In this position he was active in building the Northern Pacific Railroad and other great undertakings. When the firm of Jay Cooke & Co. failed in the panic of 1873 Mr. Fahnestock took charge of the bond department of the First National Bank in New York City. Eleven years later he became a director and vice-president of this institution. His business activities included railroads and other industrial enterprises. He gave largely to charities, although his name seldom appeared on subscription lists. He was a member of the boards of trustees of the American Museum of Natural History, the Metropolitan Museum of Art and the American Fine Arts Society.

FAILURES. See Financial Review.

FALKENHAYN, Erich von. See War of the Nations.

FALKLAND ISLANDS. A British colony, composed of a group of islands in the South Atlantic. They are East Falkland (3000 square miles), West Falkland (2300), and about 100 smaller islands (totaling about 1200 square miles). South Georgia, a group of islands 54½° S., with an area of about 1000 square miles, a great whaling station, is a dependency of the Falkland Islands. Inclusive of South Georgia the population numbered in 1911, 3275 (2370 males and 905 females). The estimated population Dec. 31, 1912, was 3298. Sheep farming is the sole industry of the colony, the entire country being wild moorland fit for little besides pasture. There are no trees. The ground in November and December is covered with wild flowers. There were in 1912 about 711,367 sheep, 7530 cattle, and 3665 horses. Hides, skins, horns, hoofs, bones, tallow, wool, and guano are the exports. From South Georgia during the season ended March 31, 1912, over 400,000 barrels of whale oil were exported. Imports and exports for 1912 were valued at £93,264 and £623,875, respectively, against £93,913 and £471,156 in 1911. The United Kingdom contributed imports valued at £82,453, and received exports £378,843. Total tonnage entered and cleared, 375,996 (315,278 in 1911). Revenue, 1912, £34,036 (1911, £35,349); expenditure, £33,508 (£22,460). There is no public debt. The only town is Stanley, with 920 inhabitants. It has a fine inner and outer harbor and is a coaling station for vessels rounding Cape Horn. Beyond the town limits there are no roads. The islands were taken possession of by the British government in 1832 for the protection of the whale fisheries. J. Quayle Dickson was the administrator in 1913 (W. L. Allardyce, Governor, appointed 1909). Other dependencies are the South Shetlands, Graham's Land, the South Orkneys, and the Sandwich group.

For naval operations in the vicinity of the Falkland Islands, consult the article on the War of the Nations, section on *Naval Operations*.

FARMING. See Agriculture.

FAURE, Jean Baptiste. A French singer and composer, died Nov. 10, 1914. He was born in Moulins in 1830, and when 13 years of age entered the Paris Conservatory. He became a chorister at the Madeleine. After winning first prize in the comic opera class at the conservatory he made his professional début at the Opera Comique in 1852. In 1861 he appeared at the Grand Opera and from then on was continually successful. In 1876 he retired from the operatic stage, but returned to the Opera Comique after some years and remained there until within a few years before his death. In 1857 he became a professor at the Conservatory. In 1881 he was made a chevalier of the Legion of Honor. As a composer he became well-known for his sacred songs, particularly *Les Rameaux* ('The Palms'). In 1886 he published *La Voix et le Chant*, a treatise on vocalization. He was also a critic and collector of art.

FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA. The work of the council was carried on aggressively during 1914 along its established lines, including State and local federations, foreign missions, home missions, religious education, social service, evangelism, Sunday observance, temperance, and peace and arbitration. During the year Rev. Sidney L. Gulick, of Japan, visited leading cities under arrangements made by the Federal Council to represent the missionaries of Japan concerning American relationships with the Eastern races. The council also published two lectures by Dr. Gulick—"A New Immigration Policy," and "The American-Japanese Problem." At the Church Peace Conference, held in Geneva on Aug. 2, 1914, Dr. Charles S. Macfarland, secretary of the council, delivered an address on "The Churches of Christ in America and International Peace." The council has undertaken to organize the religious activities in connection with the Panama-Pacific Exposition in California. It has also taken an active part in the movement to provide additional chaplains for the army and navy. A commission on peace and arbitration started an international campaign in 1913 which continued in 1914. The council in 1914 continued the compilation of religious statistics under the supervision of Dr. H. K. Carroll.

The denominations affiliated with the Federal Council are as follows: The Baptist Churches (North), the National Baptist Convention (colored), the Free Baptist Churches, the Christian Church, the Congregational Churches, the Disciples of Christ, the Friends, the German Evangelical Synod, the Evangelical Association, the Evangelical Lutheran Church (General Synod), the Mennonite Church, the Methodist Episcopal Church, the Methodist Episcopal Church (South), the African M. E. Church, the African M. E. Zion Church, the Colored M. E. Church in America, the Methodist Protestant Church, the Moravian Church, the Presbyterian Church in the U. S. A., the Presbyterian Church in U. S. (South), the Primitive Methodist Church, the

Protestant Episcopal Church, the Reformed Church in America, the Reformed Church in the United States, the Reformed Episcopal Church, the Reformed Presbyterian Church (General Synod), the Seventh Day Baptist Church, the United Presbyterian Church, the United Brethren Church, the United Evangelical Church, the United Presbyterian Church, and the Welsh Presbyterian Church. The national office is in New York City.

FEDERAL PLAN FOR CITY GOVERNMENT. See MUNICIPAL GOVERNMENT.

FEDERAL RESERVE BANKS. See BANKS AND BANKING.

FEDERATED MALAY STATES, THE. A British protectorate composed of four States in the Malay Peninsula, each administered under the advice of a British resident-general, being himself under the supervision of a high commissioner who is also the governor of the Straits Settlements. The table below gives the four States with their area, their 1911 population, and their several capitals:

	Area Sq. m.	*Pop. 1911*	*Capitals*
Perak	7,800	494,057	Taiping
Selangor	8,156	294,035	Kuala Lumpur
Negri Sembilan	2,550	130,199	Seremban
Pahang	14,000	118,708	Kuala Lipis
Total	27,506	1,036,999	Kuala Lumpur

For production, etc., see articles on PERAK, SELANGOR, NEGRI SEMBILAN, and PAHANG. The trade by States, together with the revenue and expenditure, will be found in the table below in Straits Settlements dollars:

		Perak	*Sel.*	*N. S.*	*Pahang*
Imports	1909	19,942,952	19,893,057	4,494,368	1,864,221
Exports	"	36,597,998	29,631,902	6,218,385	3,880,158
Imports	1910	21,784,861	24,315,540	870,477	2,140,973
Exports	"	44,084,758	46,732,136	7,978,071	4,048,025
Imports	1911	29,349,248	30,196,834	4,708,194	2,277,768
Exports	"	55,535,590	47,433,952	8,420,746	4,890,689
Imports	1912	34,827,168	36,144,051	5,748,135	3,929,301
Exports	"	71,715,191	61,902,862	14,882,024	6,474,618
Revenues	1909	13,647,474	8,889,651	1,806,999	902,740
Expenditures	"	11,781,554	8,184,347	2,098,159	1,569,792
Revenues	1910	14,229,799	9,235,545	2,066,578	1,017,801
Expenditures	"	12,060,565	7,831,505	1,951,112	1,755,128
Revenues	1911	19,081,190	12,330,045	2,512,002	1,133,307
Expenditures	"	13,071,195	8,715,718	1,768,733	1,647,103
Revenues	1912	23,232,794	14,848,857	2,838,602	1,728,003
Expenditures	"	16,372,251	10,759,444	1,962,354	1,896,438

The Straits Settlements dollar is equivalent to $0.56776.

The revenue and expenditure for 1909 reach a total of 25,246,864 and 23,633,852 S.S. dollars, respectively; for 1910, 26,553,018 and 23,508,610; for 1911, 35,056,544 and 25,202,749; for 1912, 42,647,687 and 30,990,487.

The Railways' Administration in 1914 operated 771 miles of line, including 37 miles opened in 1913, during which year there was a steady development of railway business. The Railways' Administration controls the line in the Malay Peninsula, including the Johore State Railways, leased since January, 1912, and in the adjacent islands of Penang and Singapore. In 1913 the Singapore Railway had 20 miles in length, which had been leased to the Railways' Administration from the colonial government from January, 1912, at a rental of $150,000, and was purchased for $4,136,000. The British residents are appointed by the Secretary of State for the colonies and are subordinate to the high commissioner. They are assisted by a staff of European officers, with executive authority. The several State councils are presided over by the native rulers under the residents' advice, and include as members the dominant native chiefs. A Federal council was established in 1909 for the "joint arrangement of all matters of common interest to the federation or affecting more than one State, and for the proper enactment of all laws intended to have force throughout the federation or in more than one State." The high commissioner presides. The council meets annually; the first meeting took place Dec. 11, 1909, at Kuala Kangsar. Sir Arthur Young was high commissioner in 1914; chief secretary, Sir Edward L. Brockman.

FEDERATION OF LABOR, AMERICAN. See LABOR, AMERICAN FEDERATION OF.

FELS, JOSEPH. An American manufacturer and philanthropist, died Feb. 22, 1914. He was born at Halifax Court House, Va., in 1854, and was educated in private schools. In 1870 he began business as a traveling salesman for toilet soap manufacturers, and four years later engaged in the manufacture of soap with his father at Baltimore. He was very successful and accumulated a large fortune. In 1905 he became deeply interested in the single-tax propaganda, and from that time until his death gave large sums and much time to that cause. He founded the Joseph Fels Fund of America, to which he contributed $25,000 annually for five years. This fund was used for promulgation of single tax theory. Mr. Fels expressed the belief that he had amassed his fortune by robbing the people, and therefore proposed to get rid of his fortune and to prevent others from following in his path by changing economic conditions. He therefore advocated the single tax and spent nothing except in the interest of that reform. His donations were not limited to the United States, but he gave largely in almost every country of the globe. He purchased 1300 acres at Hollesley Bay, England, to form a labor colony for the unemployed. This was later taken over by the British government. He also purchased 600 acres at Maylands, Essex, England, which was put under cultivation by small holders. He was one of the chief supporters of vacant lot cultivation in Philadelphia. He contributed frequently to magazines and other publications on the single tax and the taxation of land values.

FELTON, CHARLES. American public official, former United States Senator from California, died Sept. 13, 1914. He was born in Erie Co., N. Y., in 1832 and received an academic education. While still a young man he removed to California, and in 1857 served as sheriff of Yuba Co., and was later tax collector for that county. He served as member of the California House of Representatives two terms and was for six years assistant treasurer and treasurer of the United States Mint at San Francisco. In 1885 he was elected to Congress, serving until 1889. In 1891 he was appointed United States Senator to fill a vacancy.

FEMINISM. The woman movement, although interrupted and diverted into new channels by the outbreak of the European War had been making steady progress during the earlier part of the year along general social and economic lines as well as in the purely political field of suffrage agitation. (See article, WOMAN SUFFRAGE.) Feminism has continued to develop in its multiform aspects, appearing now as a conscious struggle for opportunity and for emancipation from the shackles of tradition and convention, now as an awakening of the sense of social responsibility, and to a great measure as an invasion of new fields of professional and economic activity, a movement not always consciously feminist and due to the operation of economic forces.

In the United States women have been called in increasing number to important public positions. Dr. Katharine B. Davis was appointed Commissioner of Correction of New York City and since her appointment has introduced many reforms in the prison administration. Kate Barnard, formerly Commissioner of Correction in Oklahoma, who during her tenure of office exposed the exploitation of Indians by the politicians has continued her agitation although forced out of office. Ella Flagg Young, superintendent of schools in Chicago, was forced out of her position because of her opposition to the school book monopolies, but was reinstated because of the strong public opinion in her favor. Women's organizations have been interested in the examination into the high cost of living. The Housewives' League of New York City coöperated in the inquiry into retail food prices and the establishment of three public markets in the city. An attempt of the New York State Civil Service Commission to exclude women from the examinations for the positions of directors of the newly established labor exchanges resulted in a vigorous protest from women's organizations which obtained from the commission a supplementary examination especially for women and the appointment of one woman director, in a bureau which will be concerned mainly with the employment of women and children.

In Germany and England women were active on various public bodies, educational, charitable, and other. In Norway there are to be for the next three years 11 women representatives on the city council of Christiania, two more than ever before. Of 60 representatives at Frederikastad 12 are women. In Switzerland women may now serve on the education committees and have been already summoned to them by three municipalities. In France the coöperation of women is being sought in the administration of new laws for the assistance of large families, the assistance of maternity, and the Children's Courts. Women are also demanding the abolition of night work for children, of public gambling, and of the State regulation of prostitution. The Swedish government has appointed a committee including four women members to frame laws for the protection of unmarried mothers and their children.

On the economic field the feminist movement has taken the form of a growth in the women's trade union movement, and a demand for equal pay for equal work and for a legislative minimum wage for working women in underpaid trades.

The movement for a minimum wage has received a special impetus during the last year in the United States. The Industrial Welfare Commission in Oregon has fixed a minimum wage and a maximum working-day for working-women and the constitutionality of this law is being tested now before the United States Supreme Court. The Massachusetts Minimum Wage Commission has established wage boards to fix a reasonable minimum wage for women in certain industries. The New York State Factory Investigating Commission disclosed in its various reports conditions of work and wages for women which are being made the basis for a demand for a minimum wage in that State. Other States are conducting inquiries into the conditions of employment of women and children which will be made the subject of legislation. The idea of mother's pensions is being more widely agitated also.

The "teacher-mother" controversy has occupied much attention in New York City. The struggle between the Board of Education and the feminist supporters over the right of married teachers to bear children without losing their positions continued through the year and resulted in a victory for the feminists in an order from Dr. Finley, State Commissioner of Education, reinstating with full pay all teachers suspended by the board for having borne children. In Hungary men and women teachers receive equal pay for equal work. Married teachers when they become mothers get leave of absence, a contribution to the expenses of childbirth and a free substitute. Unmarried mothers, however, lose their positions permanently. In Holland the laws of 1911 forbidding marriage to all women teachers was repealed owing to energetic propaganda of Dr. Rutgers Hoitsema. In Holland, Belgium, Denmark, and Russia women teachers are free to marry and to continue their work.

The struggle for equal pay for women teachers was particularly active in Belgium, where the feminist organizations carried out imposing public demonstrations on the question. The Hague Municipal Council decided against equal pay for equal work on the ground that men have families to support. An agitation was carried on in Holland over the law forbidding night work for women which will drive women out of the telephone, telegraph, and postal services. In Great Britain considerable excitement was caused by the rejection on the ground of custom of Miss Emily Bebbs' appeal for admission to the bar. In Germany women have for the first time been named professors, Drs. Plehn, Meisstorf, Rabinowitsch, and Hirsch. A fifth, Dr. von Linden, has been called to a chair in Roskoff University, Hungary. In Sweden the gifted writer, Selma Lagerlöf, was elected a member of the Swedish Academy, one of the most conservative institutions of that country, the only precedent being the previous election of the novelist and feminist, Frederika Bremer. In Denmark Dr. Estrid Hien, eye specialist, has been elected a member of the Board of the Royal Institute for the Blind, being the first woman to hold this position. In Denmark also the first female building engineer passed her examination with honors.

Women and the War. The outbreak of the European War gave a new direction to women's activities. Their field of employment was widened in some ways and they took over occupations in the warring countries usually assumed only by men. Some attempts at enlistment in men's dress were made and at the organization of women's battalions. But the general tone of the feminist utterances on the war was to deplore militarism and to point out the necessity of women's emancipation for the future peace of the world. The manifesto of the German suffragists is typical in this respect: "We women of all nations have in war-time the same fate; we must give up the life we brought forth; we must endure that fine warm humanity and kindness are sacrificed to horrible destruction; we must work to avoid the misery which war brings; we have to heal the wounds which men have inflicted on each other by thinking out the most refined methods of slaughter. In times of peace we women of all nations are united by the same lot. . . . Our humanity knows no national hatred, no national contempt. We are nearer to true humanity than men. Above the war of the nations we stretch out sisterly hands, we greet each other with heads bowed in mourning, more united than ever in the consciousness that only if women are freed and help to guide their States the world will be spared a repetition of such horrible happenings."

In Germany the leading women's organizations have formed a National Women's Army the object of which is to perform social service during the war supplementary to the Fatherland's Women's Union and the Red Cross. It aims at the care of families whose breadwinner is at war or unemployed because of the war, the securing of work for women who have been forced into the labor market by the war or who are willing and able to do work formerly done by men, the collection and distribution of cast-off clothing, the care of the fruit harvest, the organization of public kitchens and crèches and of workrooms for the employment of women.

The activity of the English women has been along similar lines. A truce was declared by the militant suffragists. An international demonstration of the women of all nations against the war was held in London, Aug. 4, 1914. One woman, Mrs. Tennant, was appointed on the Relief Committee organized by the government. The Women's Trade Union League and other women's organizations combined to form a Central Committee on Women's Employment, which under the secretaryship of Miss Mary Macarthur has drawn up schemes for the relief and employment of women in distress on account of the present war. These schemes include the training of workers in trades in which new openings are now offered for British trade, training in skilled trades in which there is normally a shortage of labor, training in domestic economy, especially cooking, production of useful articles which would not compete with private business, altering, making, and mending of workers' own garments, and further schemes for the employment of girls under 16 and of clerks, typists, and professional women.

The women of the United States have been active in organizing demonstrations against war, and in the organizing of Red Cross work and of relief, especially for Belgium. See also Agriculture, *Farm Women;* Woman Suffrage.

Bibliography. Beatrice Forbes Robertson Hale, *What Women Want* (New York, 1914); Irene Osgood Andrews, *Minimum Wage Legislation, Irregularity of Employment,* and *A Living Wage* (Reports for the State Factory Investigating Commission, New York, 1914); Louis D. Brandeis and Josephine Goldmark, *Brief on the Minimum Wage submitted to the Supreme Court of Oregon* (1914); Connecticut, *Report of the Special Commission to investigate the condition of wage-earning women and minors in the State . . . 1913; Report on the Wage-earning women of Kansas City for the year 1912–1913;* Industrial Commission of Ohio, *Wages and Hours of Labor of Women and Girls employed in Mercantile Establishments in Ohio in 1913. . . .* (Columbus, 1914); *Annual Report of the International Council of Women for 1913–1914; Annual Report of the International Woman Suffrage Alliance, 1914;* Josephine Levy-Rathenau, *Die Deutsche Frau im Beruf . . .* (Berlin, 1912, 3d edition); M. Lohse, *La prostitution des mineures en France avant et après la loi du 11 avril, 1908 . . .* (Paris, 1913); A. Bonnefoy, *Les Carrières Feminines Administratives et Liberales* (Paris, 1914).

FENCING. The twenty-first annual intercollegiate fencing tournament was won by Columbia for the second successive year. The U. S. Naval Academy was second. Columbia won 32 matches and lost 13, while the Navy team scored 29 victories as against 16 defeats. Other results were: Cornell, won 21, lost 24; Princeton, won 20, lost 25; Harvard, won 17, lost 28; Yale, won 16, lost 29. The individual prize went to Studdiford Pitt, Jr., of Columbia, who won 13 out of 15 bouts. The sabres championship, the first ever held by the association, was captured by Waldo S. Shumway of Columbia.

The dual matches resulted as follows: Columbia defeated Yale by 5 to 4; Harvard by 9 to 0; Pennsylvania by 6 to 3; and Cornell by 8 to 1. Columbia lost to the Navy by 4 to 5. The Naval Academy defeated Yale by 7 to 2; Harvard by 6 to 3; Cornell by 5 to 4; Columbia by 5 to 4; and Pennsylvania by 6 to 3. Cornell won from Harvard, Yale, and Pennsylvania, and lost to the Navy and Columbia. Pennsylvania won from Yale, and Harvard, and lost to Columbia, the Navy, and Cornell. Harvard won from Yale, and lost to Columbia, Cornell, Pennsylvania, and the Navy. Yale lost all its matches.

In the national championships held by the American Fencers' League, Dr. S. D. Breckinridge of the Washington Fencers' Club won with the foils, and Dr. F. W. Allen of the Boston A. A. won with the dueling swords. The sabres title went to H. Van Blyjenburgh of the New England division. The women's championship with the foils was captured by Miss Margaret Stimson of the Fencers' Club of New York.

FERDINAND I, King of Rumania, succeeding his uncle, Charles I (q.v.) on Oct. 11, 1914. He was born in 1865, and, like his predecessor, was a Hohenzollern and a Roman Catholic. He is the son of the brother of the late King

Charles and Princess Antonia of Portugal. King Ferdinand is a first cousin of the King of the Belgians and of the Czar of the Bulgarians. He is closely allied to the House of Saxe-Coburg and Gotha to which his wife, Queen Mary, belongs as daughter of the late Duke of Edinburgh. Six children were born of the marriage, the oldest of whom is Crown Prince Charles, who in 1914 was 21 years of age. On October 11th, following the death of King Charles, the Rumanian Parliament was convoked and the new king took the oath of allegiance. Subsequently the government issued a proclamation stating that the new king would follow in the footsteps of his predecessor and realize the ideals of the Rumanian race. See RUMANIA.

FERRIS, DR. ALBERT WARREN. See SARATOGA SPRINGS.

FERTILIZERS. Until quite recently it has been very difficult to get complete and accurate data regarding the world's production and consumption of fertilizers or the international trade in fertilizing materials. Fortunately the International Institute of Agriculture at Rome has undertaken to supply this deficiency in a systematic way, and now issues half-yearly reports which give a more timely and satisfactory review of the fertilizer situation than has ever before been available. These reports are to appear on the first of March and of September of each year. The first report, which appeared Sept. 1, 1914, gives the available statistics for 1913 and some data for the first half of 1914. The statistics include production, imports and exports, consumption, and prices of phosphatic, potassic, and nitrogenous fertilizers. A bibliography of recent literature relating to the subject is also given. The figures in general indicate an extension of the use of fertilizers throughout the world in 1913 as compared with 1912, and the same appears to have been true of the first half of 1914. The outbreak of the European War, however, seriously upset the fertilizer business, although the extent to which this has occurred cannot now be fully estimated.

NITROGEN. The total production of Chilean nitrate of soda, the principal source of nitrogen in fertilizers, was 2,586,975 metric tons (of 2204.6 pounds each) in 1913, as compared with 2,773,459 tons in 1912. The amount consumed for agricultural purposes in 1913 is estimated at 2,098,230 tons. The latest reports on Chilean nitrate show that production has greatly exceeded export in spite of attempts at a limitation of output, and prices have fallen accordingly. The supply on hand Nov. 1, 1914, is officially estimated at 1,060,000 tons, as against 668,400 tons at the same date last year. German imports, normally the largest in Europe, stopped in August, but British imports greatly increased, and prices have been lower than at any time in the past fifteen years.

Ammonium sulphate, the next greatest source of supply of nitrogen, was produced to the extent of 1,448,440 tons in 1913, as against 1,306,600 tons in 1912, and consumed for agricultural purposes to the extent of 1,210,550 tons. The increase in production and consumption of this fertilizing material has been especially marked in the United States.

Of the so-called synthetic nitrogenous fertilizers, calcium cyanamid is reported to have been produced to the extent of 114,093 tons in 1913, as compared with 94,438 tons in 1912, and Norwegian (calcium) nitrate to the extent of 70,000 tons (estimated) in 1913. The published figures for these products are, however, so discordant as to be of little value, although they indicate in general a marked increase in the production of these materials.

One of the most important sources of nitrogen in fertilizers, which is, however, usually overlooked in compilations of fertilizer statistics, is the organic forms of nitrogen, such as tankage, fish scrap, oil cakes, garbage, etc. The demand for many of these products for use as feeds is becoming so great that they are steadily being withdrawn from use as fertilizers. In the case of fish scrap there has been shown to be still enormous waste of material valuable for fertilizing purposes.

PHOSPHATES. The world's production of phosphates in 1913 was approximately 6,600,000 metric tons, as compared with 6,888,908 tons in 1912, the largest producers being the United States, 3,202,636 tons mined and 3,020,905 tons sold; Tunis, 2,284,678 tons mined and 1,923,000 tons exported; Algeria, 438,601 tons exported; France, 335,000 tons. The United States is by far the largest producer of phosphatic rock. Recent estimates indicate that the total reserve supply of phosphate in the United States is equivalent to 10,519,875,000 tons of high-grade rock, 7,500,000,000 tons of which is found in the recently discovered western phosphate fields. The amount of basic slag produced in 1913 was approximately 4,246,000 tons, as against 4,144,000 tons in 1912. The chief producers of this material were: Germany, 2,200,000 tons; France, 700,000 tons; Belgium, 500,000 tons; Luxemburg, 250,000 tons; the United Kingdom, 404,000 tons; and Austria-Hungary, 100,000.

A large amount of the phosphoric acid used in fertilizers is derived from bones, but statistics of the production and consumption of this material are very incomplete. The large exporting countries are Argentina and British India.

POTASH. The production of German potash salts in 1913 was 11,607,510 metric tons of crude salts and 1,647,906 tons of refined salts, the corresponding figures for 1912 being 11,070,014 and 1,461,201 tons, respectively. The total amount of potash salts, calculated as actual potash (K_2O), sold for agricultural purposes in 1913 was 1,003,913 tons, as compared with 903,759 tons the previous year. Of this amount, 749,000 tons was used in Europe and 242,283 tons in America, as compared with 668,062 and 224,075 tons, respectively, for the preceding year. The imports of potash salts into the United States during the fiscal year ended June 30, 1914, are stated to have aggregated 1,086,243 tons valued at $15,160,123, as compared with 882,560 tons valued at $12,484,576 in 1913. During the latter half of 1914, and especially since war was declared in Europe, the exports of potash salts from Germany have been relatively insignificant, although the embargo on the exportation of potash was lifted August 31, and small shipments through the Netherlands have been made since that date. The stocks on hand in Germany are stated to be abundant, and the cessation of exports is due mainly to a failure of transportation.

The shortage of the supply of German potash salts has stimulated inquiry as to other possible sources of supply. No results of practical importance from inquiries regarding the occurrence of potash deposits elsewhere than in Germany were reported during the year except in the case of Spain. Here preliminary examinations indicated the occurrence in certain provinces of important deposits similar to those of Germany. A royal decree was issued and a law proposed during the year providing for examination, reservation, and government control of these deposits. Interest was awakened in processes for rendering the potash of feldspar and other silicates available for fertilizing purposes, but these do not appear to be economically feasible unless some other salable product results from the same operation. The investigations of the U. S. Department of Agriculture indicate that the most promising American source of potash is the annual crop of giant kelps on the Pacific coast. Working maps, which have been made of nearly all of the commercially available kelp beds from the Cedros Islands to the Shumagins off the Alaskan coast, show that these beds aggregate nearly 400 square miles capable of yielding annually either as dried kelp or as pure potassium chloride over six times the present consumption of soluble potash salts in the United States, or something more than the world's present total production. It is believed that the development of a great industry, based on the conservation and utilization of this resource, is now only a matter of time.

The European War has sharply emphasized the need as regards potash, and in a less degree for all other fertilizing materials, of careful conservation and full development and utilization of the various minor sources of such materials, as well as the stoppage of waste in the exploitation of the available supplies. For example, it has been shown that "if all the coal now coked in the United States were treated in modern by-product ovens and the ammonia thereby saved, the amount of nitrogen so obtained would be about equal to that now consumed in the fertilizer trade of the country." Investigations made by the U. S. Department of Agriculture indicate that in Florida, where the most actively worked phosphate mines are situated, about two pounds of phosphorus go to waste for every pound produced in merchantable rock. Methods of preventing some of this enormous waste are being studied by the Department with considerable promise of success. Certain minor sources of potash, such as ashes, sugar making and wine making residues, wool washings, and the like, are deserving of more attention than they have generally received. The use of sodium salts as a substitute for potash salts has been suggested, but little of practical value is to be expected from such substitution. The use of lime to liberate potash in the soil is also frequently recommended, but there is no positive scientific evidence to show that lime accomplishes this result, and even if it did it would only be a species of soil robbery which must later be made good. If, as has been stated, the potash available for use as fertilizer in 1914 will be only three-eighths of the normal supply, it is evident that potash salts must for a time at least be more economically used, but it is believed that this can be done without any serious loss and in some cases with actual profit as regards agricultural production.

During the year there was considerable exploitation of so-called "radio-active fertilizers" (low-grade or partially extracted uranium ores). While it has been shown that radium emanations have a decided effect upon the germination and growth of plants, the results of experiments so far made leave it extremely doubtful whether the radio-active fertilizers used in the amounts recommended (20 to 25 pounds per acre) exert any influence as a result of such emanations, since the radium already present in an acre-foot of soil is on the average about one hundred times as great as that contained in the acre application recommended. However, the uranium present may have some stimulating effect on plants, as has been shown to be the case with various other minor or unusual soil constituents. See AGRICULTURE, *Radio-activity and Plant Growth.*

The widespread interest in the utilization of peat for fertilizing purposes was evidenced by a number of investigations reported during the year. A method of treating peat to make it more active as a fertilizer and as a medium for the growth of nitrogen-fixing bacteria (so-called bacterized peat) was published during the year. Tests of the bacterized peat prepared by this process indicated that in addition to being an excellent medium for the growth and distribution of nitrogen-fixing bacteria it possessed special fertilizing properties of its own. A great step in advance in the utilization of undeveloped fertilizer resources will have been made if some means such as this can be found for making the vast stores of nitrogen in peat beds available for fertilizing purposes.

Bibliography. International Institute of Agriculture, *Production et consummation des engrais chimiques dans le monde,* 2d ed. (Rome, 1914): "The International Movement of Fertilizers," *Internat. Inst. Agr. Rome, Mo. Bul. Agr. Intel. and Plant Diseases,* 5 (1914), No. 9, pp. 1138–1142.

FIELD, WELLS LAFLIN. An American rear admiral, retired, died Nov. 28, 1914. He was born in St. Louis, Mo., in 1846, and graduated from the United States Naval Academy in 1867. In the following year he was appointed ensign. He was promoted to be lieutenant in 1871 and lieutenant commander in 1892. He reached the rank of captain in June of 1902. In the same year he was retired with the rank of rear admiral.

FIJI ISLANDS. A group of islands in the southern Pacific, constituting a British crown colony. It includes all those islands, rocks, and reefs, lying between latitudes 15° and 22° S., and between longitudes 177° W. and 175° E. Including uninhabited rocks, etc., the islands number between 200 and 250. The principal inhabited islands are Viti Levu, 4112 square miles; Taviuni, 217; Kadavu, 124; Koro, 58; Gau, 45; and Ovalau, 43. Total area, including the dependency of Rotumah (14 square miles), is 7435 square miles. Total population (1911), 139,541 (80,008 males, 59,533 females); 1901, 120,124; 1881, 127,486. Of the total 1911 population, 87,096 were Fijians, 40,286 Indians, 3707 Europeans, 2758 Polynesians, 2401 half castes, 2176 Rotumans, 305 Chinese, 812 other. The aboriginal population numbered 140,000 in 1871, but the epidemic of measles in 1875 reduced it by more than one-fourth. The Indian immigrant population, which has replaced the Polynesians, numbers 48,614. The native birth rate was 38.1 and the death rate 31.2 per thousand in 1912. The chief products for export are sugar, copra, and fruits, principally bananas and pineapples, and effort has been made to introduce rubber planting and stock raising. The sugar export in 1912 was 61,728 tons, valued at £671,713; fruits, £120,510; copra, 13,710 tons, valued at £242,073. Total imports, 1912, £940,044, against £957,079 in 1911; exports, £1,058,960, against £1,276,207 in 1911. Customs revenue, 1911, £165,146. There are no railways. There is a telegraph line of 54 miles, a telephone line of 125, and wireless stations at Suva, the capital, Cabasa, and Waicuo. Revenue, 1912, £283,947, against £240,395 in 1911; expenditure, £268,158, against £265,347 in 1911. Tonnage entered and cleared in 1912, 613,343, of which 597,890 British; in 1911, 584,835, of which 577,731 British. Public debt, £82,815, of which £30,815 is to the imperial government and bears no interest. Sir Ernest Bickham Sweet-Escott, appointed July, 1912, was Governor in 1914.

FILTRATION. See WATER PURIFICATION.

FINANCE. See sections so entitled under various countries, and under the States of the United States. See also FINANCIAL REVIEW.

FINANCIAL REVIEW. GENERAL CONDITIONS. On the whole the year 1914 was one of financial pessimism and industrial depression. This was especially true after the outbreak of the European War, but was true also for the earlier months. The year opened with a slight revival after an unusually gloomy period during the closing quarter of 1913. In January money appeared to be abundant, loan rates were low, the stock market responded with a vigorous upward movement, and industry revived. President Wilson's trust message was well-received; British Consols rose rapidly in value; and a New York State bond issue of $50,000,000 was oversubscribed five times. In February, however, this upward tendency was checked only to be followed by recession in March. The Irish question in Great Britain, the precarious condition of American railways resulting in the discharge of thousands of men, stock market declines, and the threatening entanglement with Mexico were factors in the continued dullness of April and May.

Abroad the great banks continued to draw in gold; there was a conspicuous Canadian failure resulting in disturbance at London; Russian securities fell precipitately at St. Petersburg; and in June the firm of H. B. Claflin & Co. of New York failed. In July the stock market went downward; New Haven and Missouri Pacific stocks reached minima never before equaled; and on July 23 came the stunning effect of the Austrian note to Servia.

Yet aside from the effects of war, business conditions were not good in July. Causes for this depression were: tariff changes; banking and trust legislation; Mexican disturbances; and the railway situation. In the absence of war conditions probably would have improved. In the first place the enormous agricultural yield valued at ten billions of dollars exceeded all precedents. The cotton and wheat crops, which are factors in foreign trade, were especially notable. The Interstate Commerce Commission gave the railways much needed relief by permitting an advance of 5 per cent in freight rates. Banking and credit conditions were greatly improved by the inauguration of the new Reserve System. Trust legislation was completed with little disturbance. But the war outweighed all other factors.

THE WAR AND ITS EFFECTS. As already stated, even before the outbreak of hostilities, the sensitive barometer of finance had indicated a portentous situation. The Reichsbank had added $100,000,000 to its reserve; the Bank of Russia, $150,000,000; the Bank of France, $170,000,000; and the prices of securities everywhere were falling. Several days before the Austrian ultimatum, discount rates were advancing, sterling exchange in New York moved up rapidly, Paris made every effort to secure gold, securities were being sold in great quantities in every market, and British and French government bonds were declining significantly; on July 23, Servian government bonds fell 4 per cent in one day. As late as July 27, Lombard Street cabled to New York that war was improbable. On that same date, however, $12,000,000 in gold left New York for London at an extraordinary rate of insurance; security prices dropped sharply everywhere; and American wheat rose seven cents a bushel.

In ten days following Austria's declaration of war on Servia, American bankers shipped $45,000,000 in gold to Europe. Sight exchange on London at New York normally $4.86 rose to $5, then $6, and then $7, a rate never before equaled and evidencing the breakdown of the machinery of exchange. This was due mainly to the fact that all Europe was demanding gold from us and at the same time taking refuge behind a moratorium. By November 15 American bankers had paid $180,000,000 in gold to Europe, in addition to $120,000,000 shipped in the months of 1914 previous to the war, a remarkable evidence of financial soundness. The government coöperated with the bankers in providing emergency currency under the amended Aldrich-Vreeland Act. The Treasury Department created a Bureau of War Risk Insurance authorized by Congress September 2; the bankers themselves, moreover, issued clearing-house certificates to meet the immediate needs, and undertook concerted action in various ways.

The New York City banks were early in August confronted with the necessity of providing New York City with a gold loan of $100,000,000 to meet maturing city warrants held in London and Paris. Every bank and trust company in the city except one subscribed its share. New York bankers then created a pool of $100,000,000 to meet pressing mercantile obligations abroad and to provide a share of the $100,000,000 cotton pool. That the banks met successfully these most extraordinary demands in spite of the fact that the clearing house banks in New York City were $50,000,000 below their regularly required reserves in the early stages of the war revealed an almost perfect confidence in the soundness of American credit. See BANKS AND BANKING.

The war had a disastrous effect on American foreign trade. The cotton growers, who ordinarily export one-half their crop, were estimated to have lost nearly a billion dollars in the reduced value of their product. Numerous manufacturers suffered from the lack of German dyes. Many other industries, however, speedily revived as the result of the demands of European nations for supplies and munitions of war. Toward the close of the year the export trade in cotton was revived, though the total exports for the year were only 2,429,000 bales, as compared with 5,349,000 in 1913. South American trade was slow to develop in spite of the establishment of branch American banks in several centres. This reflected the inability of South America to buy owing to the loss of the European market. Some advantage was secured by legislation admitting American owned vessels to American registry, but the effect on the volume of trade was slight. The proposal for the government to purchase merchant vessels and engage in the foreign carrying trade, especially with South America, failed of execution.

War Loans. Doubtless the most far-reaching financial effect of the war was the sinking of billions of capital. Up to the close of the year Germany had voted two loans of $1,250,000,000 each, on August 4 and October 2; Russia, $3,000,000,000 (estimated); Austria, $2,000,000,000 (estimated); France, one of $1,340,000,000 on August 4, and one of $1,700,000,000 on December 23, the largest ever voted by any nation; Great Britain, one of $525,000,000 on August 4, and one of $1,125,000,000 on November 16. In addition large sums had been voted by Prussia, Saxony, and the minor states of Europe; and several hundred millions had been given by private persons for military and relief purposes. If to these sums were added the enormous losses in wages due to the diversion of more than 18,000,000 men from industry to war, and the accompanying losses in production and commerce, a total estimated to exceed three score billions of dollars is reached.

Stock Exchange. The prospect of war caused violent commotion on the world's stock exchanges. The bourses at Toronto and Madrid closed July 28; those at Vienna, Budapest, Brussels, Antwerp, Berlin, and Rome on July 29; those at Paris, St. Petersburg, Montreal, and in all South American countries, July 30. Early July 31 the London exchange closed for the first time in its history, to be followed after a few hours by the New York exchange. At the same time other exchanges throughout the country closed. The great exchanges at Paris and London and New York had not closed until, as a result of the perfect deluge of selling orders, there no longer existed a real market. The closing of the exchanges called for unusual forbearance on the part of bankers with loans secured by exchange collateral. The New York exchange members fixed the level of prices existing on July 30 as the official minimum at which under the control of a Committee of Five a limited amount of transactions were afterwards carried through. This measure was taken as a means of affording moderate protection to necessitous sellers. Through various special committees of the exchange more than $100,000,000 of bonds were transferred and also more than 250,000 shares of stock before the close of November. The Philadelphia exchange held public auction sales of stocks and bonds on several days, prices being found to range close to the level of July 30. The New York exchange opened for business in a restricted list of bonds on November 28, and on December 12 for trading in 181 specified stocks, but with a set of minimum prices in force in control of a Committee on Minimum Prices. Statistics of total dealings showed that stock transactions on the New York Exchange aggregated 47,899,628 for the entire year. In 1913 the total was 83,283,582; and in 1912, 131,051,116. Total bond dealings for the year were $468,898,100. In 1913 they aggregated $501,155,920; and in 1912, $674,215,000. In neither stocks nor bonds was any approach made to the great totals of prosperous years. Statistics of average quotations of 25 leading railroad stocks showed that the December maximum was 71.13; minimum, 66.76; and closing, 68.04.

For 1913 the December maximum had been 80.56; and the minimum, 77.25. Industrial stocks, however, were only slightly lower in December, 1914, than in December, 1913. The average prices of bonds were at a maximum of 89.42 on February 4, and at a minimum of 81.42 on December 2.

Emergency Currency. The closing of the stock exchanges and the declaration of a moratorium in various European centres forced American banks to take special measures to avoid a banking panic. At a conference in New York City between Secretary McAdoo and a group of New York bankers representing the Clearing House, it was decided on August 2 to issue emergency currency under the Aldrich-Vreeland act of 1908 as modified by the Federal Reserve Act of December, 1913, and to issue also clearing house certificates. To facilitate the issue of emergency currency a special amendatory act reducing the tax on such notes for the first three months of their circulation to 3 per cent and raising the limit of issues to 125 per cent of capital and surplus was hastened through Congress and signed by the President on August 4. This special act also enabled State banks affiliated with the Federal Reserve System to take out notes. Moreover, cotton and tobacco warehouse receipts were made available for note issues. By September 1 more than $250,000,000 of Aldrich-Vreeland notes had been issued; a total of $384,500,000 such notes were issued, of which $127,272,000 were retired by December 1. There was still outstanding on December 31 the sum of $150,836,000. They were accepted freely by banks and individuals. Little publicity was given to the issue of clearing house certificates but an enormous amount of them both in New York and elsewhere was issued. At New York the first issue of such was made on August 3, the last on October 15, and all were retired by November 28. The largest amount outstanding at New York at any one time was $109,185,000, as compared with $88,420,000 in 1907.

Foreign Trade. The foreign trade of the year was distinctly less than that in 1912, and that of 1913. Thus the total value of exports of merchandise for the first 11 months was $1,868,452,000 as compared with $2,250,929,000 for the same period in 1913 and only slightly less for 1912. The total value of imports for the first 11 months was $1,674,896,000. This was slightly larger than in either of the two preceding years. The excess of exports in 1914 was therefore only $193,555,000, whereas in 1913 it had been $642,100,000, and in 1912 $484,624,000 for the 11 months. In other words, exports for 11 months were 17 per cent less than in 1912 or 1913, while imports were 4 per cent larger than in 1912 and 1 per cent larger than in 1913.

Much interest was attached to the fact that imports showed a larger proportion of duty-free products, and a great decrease in most lines of dutiable products. While imports as a whole increased, customs collections diminished. Duty-free imports comprised 61 per cent of all imports, and increased 21 per cent in value over 1913. Dutiable imports comprised only 39 per cent of all imports and decreased 11 per cent from 1913 value. Among duty-free imports food showed an increase of 50 per cent in value; crude raw materials, 14 per cent; and manufactures, 17 per cent. Among dutiable imports crude materials fell 44 per cent in value; foods gained 10 per cent; and manufactures diminished 18 per cent. Crude-material imports showed a total gain of 6 per cent; foods and animals gained 28 per cent; but manufactured goods decreased 6 per cent. The principal gain in imports was in food products, there being increases in live stock, bread stuffs, meats, dairy products, and sugar. There was also a tremendous gain in raw wools and smaller gains in hides and skins. There was, on the other hand, a large decrease in precious stones. At New York the total of imports and exports of merchandise was $1,799,929,000 for the entire year, a decline of $108,337,000 from 1913. Customs collections of the port were $36,542,000 less than in 1913, the total being $167,081,000. Imports showed none of the expected dumping of European wares as the result of Democratic tariff changes, but were $35,000,000 less than in 1913. Exports of domestic goods were $104,600,000 less than in 1913. The exports of gold and silver for the year totaled $155,395,000, of which about two-thirds went out in May, June, and July.

Great Britain. The British Board of Trade figures showed that total imports for the first 11 months of 1914 were valued at £629,915,000. This was nearly 10 per cent less than for the same period in 1913, and 6 per cent less than in 1912. Total exports for the 11 months were valued at £495,933,000. This was a decrease of about 15 per cent from the figures for the same period for 1913 and 9 per cent from 1912. During the first seven months of the year the totals of imports and exports were very similar to those for 1913, but following the outbreak of the war very sharp declines were observed. Thus the imports for September, 1913, were £61,359,000, but for September, 1914, they were only £45,056,000. Likewise, the exports for September, 1913, were £49,277,000, but for September, 1914, they were £33,527,000. The differences in October and November were equally or even more striking.

Bank Clearings. For the month of January the clearings in 120 American cities totaled $16,053,000,000, an amount approximately equal to that of January, 1913, and greatly exceeding the same month in any previous year. For February the total was $12,736,000,000; March, $14,112,000,000; April, $14,767,000,000; May, $13,036,000,000; June, $13,812,000,000; July, $14,361,000,000; August, $9,814,000,000; September, $9,897,000,000; October, $11,594,000,000; November, $10,954,000,000. The totals for the first two quarters were approximately the same in 1914 as in 1913 and 1912. Following the outbreak of the war, however, a decided slump reduced the totals by from 10 to 20 per cent. The same general statement applies to the movement of bank clearings in New York City. During the first two quarters the totals compared favorably with those of 1912 and 1913; but a sharp decline was seen beginning with August. Thus the New York clearings in November were $5,399,000,000; whereas in November, 1913, they were $7,587,000,000, and in November, 1912, $8,819,000,000.

In the country as a whole during the 11 months there was a decrease of 9 per cent from the 1913 total for the same months, 11 per cent from 1912, 2 per cent from 1911. In New York City the total for 11 months was 11 per cent less than in the same months of 1913, 16 per cent less than in 1912, and 9 per cent less than in 1911. Thus New York City suffered a heavier decline than the rest of the country.

Canadian bank clearings passed through a similar course. For the first 11 months of 1914 they totaled $7,298,000,000, or 11.3 per cent less than for the same months in 1913. November clearings at Montreal were 17 per cent less than in November, 1913, at Toronto, 20 per cent less, and at Winnipeg, 30 per cent less.

New Incorporations. According to the *Journal of Commerce*, new incorporations of companies with $1,000,000 capital or over in the Eastern States for the first 11 months of 1914 totaled $789,497,000. This was only slightly more than 50 per cent of the total for the same period of 1913, and only 37 per cent of the total for the first 11 months of 1912. During every month of 1914 the authorized capital of new companies was much less than in the corresponding month of the preceding year except in November.

Building. According to *Bradstreet's* the total expenditures for building during the first nine months of 1914 was $632,837,000. This was a decrease of 8.7 per cent as compared with 1913. The total in 1912 moreover for the same period had been $714,476,000. The month of October, 1914, showed a decrease of 21 per cent, and November a decrease of 13.7 per cent, in comparison with the same months of 1913. These figures indicated a considerable amount of unemployment in building and allied trades. The Canadian figures for November showed a decrease of 47.7 per cent from the figures for November, 1913.

Failures. According to *Bradstreet's*, the total number of failures for the first 11 months of 1914 were 14,555, with total assets of $169,418,000, and total liabilities of $296,522,000. For the 11 months failures were 1700 more numerous, while liabilities were $43,100,000 greater and assets were $28,355,000 greater than in 11 months of 1913. The number of failures was very much greater than in any preceding year for the same 11 months; liabilities were exceeded only in 1907, though approached in 1908; assets likewise were exceeded in 1907, and approached in 1908. Comparison by months shows that failures were more numerous in every month in 1914 than in the corresponding month in 1913. As a rule also liabilities and assets were greater month by month in 1914 than in 1913. The number of failures in the first quarter of the year was 4195; in the second, 3553; in the third, 3777; in October, 1445; and in November, 1585. Liabilities were $81,515,000 for the first quarter; $66,790,000 for the second; and $99,778,000 for the third. They dropped to $23,561,000 in October, and $24,876,000 in November. Maximum liabilities were shown by the failures of August and January. The effect therefore of the unusual disturbance of the European War was slight.

THE FORD COMPANY. On January 5, Mr. Henry Ford, President and controlling stockholder of the Ford Motor Company of Detroit, announced that $10,000,000 of the profits of that company would be distributed among its employees during 1914. This distribution was to be made by semi-monthly additions to pay checks. At the same time three shifts of eight hours each replaced two of nine hours each, thus adding about a fourth to the number of employees. This raised the number of employees to 26,000. A minimum wage of five dollars a day was provided for employees of 21 years or over meeting certain standards, regardless of position. This distribution was made possible by the extraordinary prosperity of the firm. In the year ending Sept. 30, 1913, the assets increased from $20,815,000 to $35,033,000, and in the year ending September 30, 1914, its assets increased to $61,632,000, and its surplus from $28,024,000 to $48,827,000. Cash on hand and in banks aggregated $27,441,000 Sept. 30, 1914. Mr. Ford declared his scheme was "neither charity nor wages," but profit-sharing and efficiency-engineering. He believed that labor does not get its just share of earnings. Moreover, his company desired to promote the happiness of employees and bring labor and capital together. In November it was reported that 9200 employees were benefiting by the plan. They had increased bank deposits and insurance by large sums and purchased homes in large numbers.

Opinion differed widely as to the soundness of this innovation. It was pointed out that it was not true profit sharing; that it would embarrass numerous other companies in the automobile and various branches of the metal trades whose employees would demand similar increases; and later inquiry showed that the scheme was accompanied by considerable tutelage and dictation to employees in their private affairs. On the other hand it was argued that this scheme did powerfully promote efficiency. In addition to the regular quarterly dividends of 15 per cent, an extra cash dividend of $2,000,000 was paid in June. Later in the year several thousand men were laid off, partly owing to usual seasonal change and partly to the European War.

See AGRICULTURAL CREDIT; BANKS AND BANKING; BLUE SKY LAWS; INSURANCE; NATIONAL BANKS; STATE BANKS; LOAN AND TRUST COMPANIES; MONEY; SAVINGS BANKS; POSTAL SAVINGS BANKS; PRIVATE BANKS; PRICES; TARIFF; TRUSTS. See also LABOR and various articles there referred to.

FINLAND. A grand duchy on the gulf of Bothnia, forming part of the Russian Empire. Capital, Helsingfors.

AREA, POPULATION, ETC. Total area, 144,249 square miles, of which 11 per cent is under lakes. Total population, 1911, 3,154,824; 1906, 2,933,856 (2,523,049 rural, and 410,807 urban). Of the population in 1911, 3,096,263 were Evangelical, 52,728 Orthodox Greek, etc. Finnish was the mother tongue of 2,578,145, Swedish of 338,961, etc. Helsingfors had 153,642 inhabitants in 1911, compared with 130,844 in 1907; Abo, 50,994, and 46,637; Tammerfors, 45,791, and 43,696; Viborg, 27,769, and 33,175; Uleåborg, 20,896, and 18,398. There were 18,735 marriages in 1911, 91,238 births, and 51,648 deaths. Primary education is free and compulsory; there is a university at Helsingfors.

PRODUCTION. The crown forests in January, 1913, covered 12,616,000 hectares. In 1911 there were 175 saw mills, giving occupation to 24,743 workers; aggregate production, 3,740,000 cubic meters of timber. Cost of maintenance of crown forests for the year 1911, 2,850,959 marks; income, 13,239,900 marks. The yield of agricultural products was 49,503 hectoliters of wheat in 1911; 3,317,500 of rye in 1911; and 4,357,100 in 1912; barley 1,739,000, and 2,382,000; oats, 6,683,500, and 9,383,400; potatoes, 6,497,100, and 8,277,100; flax and hemp, 11,589 tons in 1911. Horses in the country numbered 297,648 over three years of age at the end of 1911, and cattle 1,187,974 over two years. Production of iron ore in 1911, 2358 metric tons; pig iron, 8788; bar iron, 33,542. Employed in manufacturing industries were 97,222 work people; value of output, 615,122,300 marks, exclusive of flour.

COMMERCE AND COMMUNICATION. The trade (external) for three years is given in the table below in Finnish marks.

	1910	*1911*	*1912*
Imports	384,089,000	444,504,000	420,082,000
Exports	290,142,000	319,550,000	370,040,000

Some of the principal articles of import for consumption and exports of domestic produce are seen in the table below in thousands of marks.

Imports	*1000 m.*	*Exports*	*1000 m.*
Cereals	87,800	Timber	166,200
Machinery	28,200	Paper and pulp.	64,100
Iron and mfrs.....	25,400	Butter	84,900
Coffee	24,400	Hides and leather	12,600
Minerals	20,000	Wooden wares .	7,200
Sugar	19,900	Fish	5,500
Hides and skins ..	18,900	Cotton textiles..	4,800
Cotton	16,100	Iron	1,500

The principal countries of origin and destination in the 1912 trade were Germany, with 186,800 thousand marks imports, and 48,200 thousand marks exports; Russia, 131,100, and 98,400; Great Britain, 68,300, and 87,600; Sweden and Norway, 26,000 and 15,100; Denmark, 25,200, and 11,700; France, 7500, and 28,200; the Low Countries, 15,700, and 32,600.

Vessels entered in the 1912 trade, 10,020, of 2,929,793 tons; cleared, 10,090, of 2,927,371 tons. Merchant marine Jan. 1, 1913, 3425 vessels, of 392,408 tons. Railways in operation January, 1913, 3763 kilometers.

FINANCE. The details of revenue and expenditure for the year 1912 are shown in the table below in thousands of marks:

Revenue	*1000 m.*	*Expenditure*	*1000 m.*
Customs	57,096	Communications	48,535
Railways	58,480	Instructions, etc.	16,187
Domains, etc.	16,280	Administration .	14,803
Excise	18,501	Military	18,161
Posts	7,891	Debt	8,474
Lighthouses	1,869	Justice	5,454
Land tax	8,625	Forests, etc.	5,519
Personal tax	2,309	Pensions, etc. ..	5,250
Interest	1,968	Agriculture	7,469
Stamps	4,169	Commerce, etc...	7,193
Hospitals	982	Government	8,025
Industrial tax ...	582	Customs, etc....	8,834
Fees	452	Printing, etc. ..	772
Canals	984	Diet	681
Other ordinary....	6,681	Russian contribution	480
Extraordinary	1,028	Other ordinary..	5,121
		Extraordinary ..	20,854
Total	172,344	Total	166,262

The debt stood Jan. 1, 1913, at 174,640,334 marks.

GOVERNMENT. The Emperor of Russia is the grand duke, who summons and may dissolve the diet. This body, which is unicameral, is chosen by direct proportional election, the suffrage being possessed by each citizen (with the usual exceptions) who has reached his or her 24th year. Every voting citizen is eligible to the diet, to which at the first election, in 1907, 22 women were elected. The diet, which lasts for three years unless sooner dissolved, has power to enact legislation which does not affect the fundamental laws or the organization of land and sea defense. The grand duchy is included in the Petrograd military district. The executive, at the head of which are the governor-general and the Russian secretary of state for Finland, is responsible both to the grand duke and to the diet. Until the present régime Finland enjoyed the autonomy guaranteed her in the reign of Alexander I. Latterly the Russification system has been applied to an increasing number of departments; by the end of 1912 the constitution was virtually annulled, and the diet is little better than a figurehead.

HISTORY. After eight months of solitary confinement in St. Petersburg prisons, the 16 Finnish judges were allowed to return to their native land, but not to hold any office again before 1924. The 16, it will be remembered, had been cast into prison for refusing to recognize the validity of the Equality Law passed by the Russian government in 1912, but never sanctioned by the Finnish Diet as provided by the Finnish Constitution. A series of other measures had been imposed upon Finland without the consent of the diet—measures prescribing the use of the Russian language in the Finnish courts and public offices, giving Russian courts jurisdiction over political offenses committed in Finland, bringing Finland under the Russian tariff system, and depriving Finland of the two Viborg parishes of Nykyrka and Kivinebb. All were incidental to the policy of Russifying Finland. But the Equality Law of 1912 was especially detested because, by removing certain qualifications of the Finnish law for office-holders, it enabled Russians to hold office in Finland, and thus prepared the way for Russian bureaucracy. Every Finnish official felt that his own tenure of office, as well as the liberty of his compatriots, was menaced. Many Finnish magistrates were punished for resisting. Finally all of the 16 judges of the Finnish Court of Appeals at Helsingfors were imprisoned. Their release, which took place in 1914, was enthusiastically celebrated by the townspeople of Helsingfors—so enthusiastically, indeed, that the Russian mounted police had to flog the people with whips in order to clear the streets.

FIRE DAMP INDICATOR. See CHEMISTRY, INDUSTRIAL.

FIRE INSURANCE. See INSURANCE.

FIRE PREVENTION. See FIRE PROTECTION.

FIRE PROTECTION. The importance of fire protection and fire prevention in the United States continued to attract attention during 1914. The various agencies concerned were active in the campaigns for more thorough inspection, and the enactment and enforcement of proper legislation. The National Board of Fire Underwriters through its committee on statistics and origin of fires, on May 28, 1914, published its annual report, which gave comparative fire losses for the United States and Canada as well as for the leading European and Asiatic cities. The disparity in total and per capita losses between American and other countries was strikingly illustrated by these figures which are summarized in the accompanying tables.

STATISTICS OF FIRES IN AMERICAN CITIES, 1913

	Area Sq. m.	*Population*	*No. of Alarms*	*Total No. of Fires*	*Confined to Building or Place of Origin*	*Total Loss*	*No. of Fires per 1000 Pop.*	*Loss per Capita*
New York	310.20	5,476,996	14,787	12,959	12,727	$7,476,997	2.37	$1.36
Chicago	195.5	2,450,000	14,683	8,675	8,288	5,513,287	3.54	2.25
Philadelphia	129.5	1,650,000	4,096	3,651	3,532	2,189,876	2.21	1.33
St. Louis	61.37	775,000	5,316	4,705	4,638	1,843,489	6.07	2.38
Boston	47.35	735,399	4,947	3,807	3,772	4,254,848	5.18	5.79
Cleveland	51.33	650,000	3,195	2,638	2,545	848,032	4.06	1.30
Baltimore	33.33	600,000	1,978	1,908	1,895	1,106,864	3.18	1.84
Pittsburgh	40.67	565,000	2,057	1,949	1,929	732,000	3.45	1.28
Detroit	41.5	550,000	3,282	2,865	....	1,629,604	5.21	2.96
Buffalo	42	440,000	2,185	2,185	2,171	1,043,753	4.97	2.37
San Francisco	38.87	430,000	2,594	2,399	2,282	977,181	5.58	2.27
Cincinnati	68.68	400,311	2,320	2,248	....	1,083,181	5.63	2.71
Newark	23.5	390,000	1,247	1,065	1,008	809,926	2.73	2.08
New Orleans	196.25	350,000	748	727	680	518,242	2.08	1.47
Washington	70	350,843	1,245	1,159	1,106	493,617	16.56	1.41
Los Angeles	121	365,000	2,456	2,195	2,109	1,347,260	6.01	3.69

COMPARATIVE FIRE LOSSES

	Number of Cities Reporting Loss			*Population*			*Per Capita Loss*		
	1911	*1912*	*1913*	*1911*	*1912*	*1913*	*1911*	*1912*	*1913*
United States	298	300	298	31,210,084	32,326,633	33,281,804	2.62	2.55	2.25
Argentina	..	1	1	....	1,428,042	1,428,042	...	3.58	4.21
Austria	1	4	4	2,031,498	2,658,078	2,734,986	.08	.30	.25
Belgium	..	1	1	....	166,445	168,812	...	.69	1.36
Canada	1	5	6	125,000	957,372	612,453	2.61	2.88	2.46
Chile	..	..	1	....	......	200,000	...	...	.30
England	12	12	14	9,898,817	7,164,849	7,396,664	.53	.54	.33
France	8	6	5	3,518,493	4,425,696	3,945,743	.81	.84	.49
Germany	8	9	8	2,806,354	2,659,575	2,559,608	.21	.20	.28
Hawaii	..	..	1	....	......	45,000	...	...	.69
Ireland	2	2	2	694,272	699,808	701,400	.58	.57	.28

	Number of Cities Reporting Loss			*Population*			*Per Capita Loss*		
	1911	*1912*	*1913*	*1911*	*1912*	*1913*	*1911*	*1912*	*1913*
Italy	6	8	5	1,878,995	282,082	1,161,465	.81	.90	.25
Japan	..	..	8	....	......	2,481,528	...	...	.59
Norway	..	1	1	....	250,000	250,400	...	.69	.82
Philippine Islands	..	..	1	....	......	284,409	...	...	4.41
Russia	2	2	2	8,488,291	3,485,588	3,710,000	1.17	.84	.89
Scotland	2	2	3	484,190	485,091	1,516,905	.56	.49	.36
Spain	..	..	1	....	......	605,870	...	...	2.30
Sweden	..	1	1	....	851,500	888,000	...	.18	.74
Switzerland	..	1	1	....	140,000	142,000	...	.04	.15
The Netherlands	..	2	1	....	417,693	801,846	...	.12	.11

	Population	*Total Loss*	*Per Capita*
1911—Whole country	98,927,000	*217,004,575	2.31
298 cities	81,210,084	† 81,790,877	2.62
1912—Whole country	95,410,508	*206,438,900	2.16
300 cities	82,826,683	† 82,297,386	2.55
1913—Whole country	97,163,380	*203,763,550	2.10
298 cities	38,281,804	† 74,876,608	2.25

* Estimated.
† Actual figures reported.

STATISTICS OF FIRES IN GREAT CITIES OF THE WORLD OUTSIDE OF THE U. S., 1913

Place	*Area Sq. m.*	*Population*	*No. of Alarms*	*Total No. of Fires*	*Confined to Building or Place of Origin*	*Total Loss*	*No. of Fires per 1000 Pop.*	*Loss per Capita*	*Loss per Fire*
Argentina—									
1 Buenos Aires	78.38	1,428,042	...	578	....	$6,010,970	.45	$4.21	$10,400
Australia—									
1 Melbourne	280	690,000	2,068	1,119	1,018	......	1.62	....	....
Austria—									
1 Graz	8.35	155,800	121	62	60	87,110	.40	.56	1,405
2 Lemberg	12.22	206,113	498	432	432	149,790	2.10	.73	347
3 Trieste	18.82	240,500	479	394	394	149,475	1.64	.62	379
4 Vienna	106.47	2,132,528	1,708	1,495	1,495	308,200	.70	.14	208
Belgium—									
1 Brussels	....	700,000	411	364	....	......	.52	....	....
2 Ghent	31.64	168,812	214	136	129	229,380	.81	1.36	1,687
Canada—									
1 Halifax	....	46,619	174	174	....	100,918	3.78	2.17	580
2 Hamilton	9.97	100,808	497	186	180	112,116	1.85	1.11	603
3 London	9.9	55,026	198	166	163	112,933	3.02	2.05	680
4 St. John	2.5	50,000	238	215	215	275,000	4.30	5.50	1,279
5 St. John's City	.4	32,292	80	80	65	....	2.48	....	.....
6 Vancouver	16.89	160,000	552	241	231	627,799	1.51	3.92	2,605
7 Winnipeg	24.5	200,000	438	247	...	276,814	1.23	1.38	1,121
Chile—									
1 Valparaiso	....	200,000	...	15	...	60,000	.08	.30	4,000
Denmark—									
1 Copenhagen	27.13	475,750	656	626	626	....	1.32	....	.....
England—									
1 Bath	8.05	69,173	64	46	46	9,155	.67	.13	199
2 Birkenhead	6.16	187,000	111	106	105	76,230	.77	.56	719
3 Birmingham	68.12	840,202	1,070	823	810	277,370	.98	.33	337
4 Bolton	23.87	188,879	77	72	72	38,110	.39	.21	529
5 Bradford	35.7	290,283	181	155	154	......	.53	....	....
6 Brighton	....	131,237	184	74	...	10,885	.56	.08	147
7 Cardiff	9.96	182,259,	184	177	177	32,800	.97	.18	185
8 Lancaster	10	41,414	16	16	16	4,505	.39	.11	282
9 Leeds	41	452,948	319	305	305	132,790	.67	.29	435
10 London	117	4,519,754	5,820	3,377	...	1,695,400	.75	.37	502
11 Middlesborough	6.75	121,806	58	51	50	17,410	.42	.14	341
12 Sheffield	38	471,662	420	374	374	128,425	.79	.27	343
13 Southampton	9.09	123,948	78	71	69	13,000	.57	.11	183
14 Torquay	6.03	39,100	14	14	14	1,195	.36	.03	85
15 York	5.76	82,282	45	44					
France—					...	5,960	.53	.07	135
1 Bordeaux	13.62	261,788	364	132	122	251,840	.50	.96	1,900
2 Lyons	17.37	523.796	248	225	220	197,548	.43	.38	878
3 Marseilles	38.7	550,500	507	501	491	186,743	.91	.34	355
4 Nancy	....	......	...	...	...	....	....	....	.....
5 Paris	30.11	2,846,986	4,685	3,766	...	1,074,594	1.32	.38	285
6 Roubaix	4.96	122,723	78	75	72	205,000	.61	1.67	2,733
Germany—									
1 Aachen	63.38	159,887	259	224	223	55,164	1.40	.35	246
2 Berlin	24.5	2,093,417	2,546	1,905	...	....	91	....	.....
3 Bremen	21.21	266,600	578	502	498	125,250	1.88	.47	249
4 Brunswick	.7	149,000	115	91	91	....	.61	....	.....
5 Dresden	27.9	551,697	564	420	420	....	.76	....	.....
6 Flensburg	17.02	65,202	72	57	57	11,580	.87	.18	203
7 Frankfurt a.M	52.01	445,000	296	241	241	40,531	.54	.09	168
8 Frankfurt	....	......	...	...	...	....	....	....	.....
9 Hamburg	47.5	1,030,983	2,208	1,740	1732	332,688	1.69	.32	191
10 Hannover	41.64	372,274	350	282	282	35,772	.76	.10	127

Place	*Area Sq. m.*	*Population*	*No. of Alarms*	*Total No. of Fires*	*Confined to Building or Place of Origin*	*Total Loss*	*No. of Fires per 1000 Pop.*	*Loss per Capita*	*Loss per Fire*
11 Kaiserlauten .	85	54,662	36	36	34	85,201	.66	1.56	2,367
12 Posen	18.1	165,000	240	193	193	26,335	1.17	.16	136
13 Stuttgart	25.12	308,140	178	148	148	....	.48	....	.....
Hawaii—									
1 Honolulu	7.5	45,000	86	76	...	31,127	1.69	.69	404
Hungary—									
1 Budapest	....	985,660	881	660	...	....	.75	....	.....
Ireland—									
1 Belfast	25.8	390,000	128	111	...	95,325	.28	.24	859
2 Dublin	12.4	311,400	245	146	146	100,350	.47	.32	687
Italy—									
1 Brescia	24	84,398	184	118	...	10,904	1.40	.13	92
2 Florence	....	232,860	227	207	...	110,745	.89	.48	535
3 Messina	....	127,689	129	103	103	19,222	.81	.15	187
4 Milan	....	645,688	938	751	751	127,686	1.16	.20	170
5 Ravenna	....	70,840	31	30	30	19,000	.42	.27	633
Japan—									
1 Hakodate	16	100,778	20	20	12	354,095	.19	3.51	17,705
2 Nagoya	....	347,484	96	96	78	349,187	.28	1.01	3,638
3 Tokio	30	2,033,321	468	468	...	751,000	.23	.37	1,605
Norway—									
1 Christiania ..	6.8	250,400	370	313	312	79,251	1.25	.32	253
Philippine Islands—									
1 Manila	14.9	234,409	159	161	143	1,034,240	.69	4.41	6,424
Russia—									
1 Moscow	35.3	1,800,000	1,203	1,155	1092	1,640,884	.64	.91	1,421
2 St. Petersburg.	123	1,910,000	1,899	1,540	...	1,669,878	.81	.87	1,084
Scotland—									
1 Aberdeen	10.5	163,891	151	119	118	34,190	.73	.21	287
2 Edinburgh ..	18	321,014	622	386	383	145,705	1.20	.45	377
3 Glasgow	20.27	1,032,000	1,269	789	...	370,000	.77	.36	469
Spain—									
1 Madrid	....	605,870	770	734	611	1,394,000	1.21	2.30	1,899
Sweden—									
1 Stockholm ...	46.37	383,000	679	668	667	282,614	1.74	.74	423
Switzerland—									
1 Basel	14.32	142,000	78	78	78	21,494	.55	.15	276
The Netherlands—									
1 Amsterdam ..	18	594,000	1,975	1,252	1,250	....	2.11	....	.....
2 The Hague ..	16.1	301,846	946	331	331	34,227	1.10	.11	103

American Fire Losses in 1914. The losses by fire in the United States and Canada during 1914, as recorded by *The Journal of Commerce and Commercial Bulletin*, of New York City, aggregated $235,591,350, or nearly $11,000,000 more than in the preceding year. This was the heaviest loss to property by fire in North America with three exceptions, namely: 1908, the year of the Chelsea, Mass., and three other conflagrations; 1906, the year of the San Francisco conflagration, and 1904, the year of the Baltimore conflagration. The fire losses of 1914 were increased by the Salem, Mass., conflagration, costing $13,000,000, but averaged moderate until the last two months of the year, when the general burning ratio increased extraordinarily.

The only big conflagration during 1914 was at Salem, Mass., but there were no less than 46 fires each causing an estimated property damage of $500,000 or over. These fires, with losses, were as follows:

Montreal, Que., wholesale hardware store..	$ 500,000
Brooklyn, N. Y., dried fruit warehouse ..	500,000
Manchester, N. H., business block	500,000
Clinton, Tex., cotton compress and yards.	1,000,000
Chicago, Ill., grain elevator	900,000
St. Louis, Mo., rubber works and other..	500,000
Big Island, Va., paper mill	500,000
Waco, Tex., cotton warehouse	500,000
Portland, Ore., dock, steamship and warehouse	1,000,000
Wellesley, Mass., college buildings	900,000
Vancouver, B. C., wholesale grocery and other	600,000
Durham, N. C., several business houses ..	875,000
St. Augustine, Fla., hotels and other	650,000
Decatur, Ill., department store	750,000
St. Andrew, N. B., hotel and stores	500,000
Aberdeen, Ont., paper mill	500,000
Pasadena, Cal., hotel and other	500,000
Washington, D. C., high school laboratory..	500,000
Curtis Bay, Md., fertilizer plant	650,000
Houghton, Mich., foundry	500,000
Louisville, Ky., tobacco warehouse	500,000
Galveston, Tex., cotton compress and cotton	900,000
Cleveland, O., lumber yard and other	1,250,000
Dover, N. J., stove works	500,000
Salem, Mass., conflagration	13,000,000
Three Rivers, Que., pulp mill and other ..	500,000
Chicago, Ill., cooperage and other	500,000
Newton, Kan., auditorium and other	500,000
Carlton, Ore., lumber plant	500,000
Aurora, Ill., chemical plant	500,000
Tacoma, Wash., meat packing plant and other	1,000,000
Newark, N. J., chemical plant	500,000
Paterson, N. J., pipe works	500,000
Carson, La., lumber plant	500,000
Ringling, Okla., oil field property	500,000
Pittsburgh, Pa., hardware store and other.	500,000
Lake Charles, La., saw mill and lumber ..	500,000
Portland, Ore., steamer and cargo	700,000
Beaumont, Tex., hotel and stores	500,000
Jeannette, Pa., glass factory warehouse ..	1,000,000
Farmville, N. C., cotton warehouse, etc...	600,000
Galveston, Tex., grain elevator	1,000,000
Ardsley, N. Y., business section	500,000
West Orange, N. J., electrical and film manufacturing plant	1,250,000
Port Griffin, Pa., coal breaker	500,000
Pottsville, Pa., several business blocks	800,000

During the 38 years ended 1914, the property destroyed by fire in the United States and Canada reached the total value of $5,866,981,025, equal to an average annual loss of $154,394,237.

The accompanying table, giving the losses by years during this period, indicates the steady enlarging tendency of the country's fire waste, notwithstanding all the efforts to induce better building construction and more real endeavor for fire prevention:

FIRE LOSSES DURING THIRTY-EIGHT YEARS
AGGREGATE $5,866,981,025

1914	.....$235,591,350	1895	.....$129,835,700
1913	 224,723,350	1894	 128,246,400
1912	 225,320,900	1893	 156,445,875
1911	 234,337,250	1892	 151,516,000
1910	 234,470,650	1891	 143,764,000
1909	 203,649,200	1890	 108,993,700
1908	 238,562,250	1889	 123,046,800
1907	 215,671,250	1888	 110,885,600
1906	 459,710,000	1887	 120,283,000
1905	 175,193,800	1886	 104,924,700
1904	 252,554,050	1885	 102,818,700
1903	 156,195,700	1884	 110,008,600
1902	 149,260,850	1883	 110,149,000
1901	 164,347,450	1882	 84,505,000
1900	 163,362,250	1881	 81,280,000
1899	 136,773,200	1880	 74,643,400
1898	 119,650,500	1879	 77,703,700
1897	 110,319,650	1878	 84,315,900
1896	 115,655,500	1877	 68,265,800
Total for 38 years			...............$5,866,981,025

Personal Liability for Fires. A somewhat novel case in American practice was that before the courts of the State of New York during the year 1914, involving the personal liability of the owner of premises, for fire which had occurred after the fire department had ordered the installation of sprinklers or other requirements, which orders the owner had neglected. The fire commissioner brought suit to recover the cost of putting out a disastrous fire, and was able to recover damages, being sustained in his position by a higher court. This follows somewhat European practice, and was considered an important development of the year and one likely to strengthen the fire department in its work of fire prevention, through compulsory installation of suitable appliances, such as sprinklers, etc. Somewhat similar action was being taken in Massachusetts and further developments along this line were promised.

High Pressure Fire System for Boston. While Boston, Mass., was one of the first cities in the United States to lay a separate pipe-line solely for fire protection purposes, it had not pursued this plan as actively as other cities. The original fire main referred to was but one mile of pipe, which was supplied with salt water from the harbor, pumped by fire boats. A large fire on Aug. 9, 1910, required the use of 41 fire engines, while at the same time 16 fire engines were engaged at a second-alarm fire, and 15 engines from adjoining cities rendered aid to the firemen. This emphasized the need of additional protection and it was determined in the following year that a high pressure fire service branch of the water service should be organized, with the result that after plans had been prepared the laying of pipes was begun August, 1914. The area to be protected by this system contains about 550 acres, comprising the whole of the 335 acres, termed by the underwriters the congested value district, and the adjacent territory, through which it was necessary to lay pipe to serve the high value area. The plan devised gives a system with a capacity of 20,000 gallons of water per minute on any single block, and 10,000 gallons of water per minute in any single building. The pumping stations will be operated by motor-driven centrifugal pumps, with electrical energy supplied over duplicate service lines from the power plant of the Edison Electrical Illuminating Company, and were to be located near Fort Point Channel in the vicinity of the South Terminal Station. New mains will be run to the station to supply water needed in the high pressure service. Each pump will be capable of delivering 3000 gallons per minute at a pressure of 300 pounds per square inch, and a duplex distribution system composed of two independent sets of mains on alternate streets was designed, similar to that employed for the lower section of the New York high pressure service. This was to require about 13 miles of pipe from 12 to 20 inches in diameter, and cast iron pipe is used with a special bell and spigot joint, made with an alloy of 96 per cent lead and 2 per cent antimony and 2 per cent tin. All pipes after laying were to be tested at 400 pounds per square inch, and the leakage must not exceed one-half gallon per linear foot of pipe joint for 24 hours. The mains were to be equipped with gate valves so that a break in a pipe would not put out of service more than three hydrants, each valve being placed at a manhole large enough to permit access for maintenance and repairs. About 450 hydrants specially designed by the Public Works Department of Boston were to be placed within the area protected with one hydrant to each 40,000 square feet of area, so that through hose lines of moderate length, the entire capacity of the city could be concentrated. This new system is an important development in the fire protection of Boston, and one that will diminish materially conflagration hazards.

Salem Conflagration. The most notable conflagration of the year occurred at Salem, Mass., June 25 and 26, 1914, in the course of which 1600 buildings were destroyed in 13 hours, and 253 acres laid in ruins. The direct loss amounted to over $14,000,000, and of this $11,700,000 represented insurance. The fire started in the Korn Factory and rapidly spread throughout the city, the construction of the buildings being such that all conditions were favorable for the rapid progress of the fire although the wind was light. The fire departments from the adjoining cities were called upon, and the water supplies of Peabody, Danvers, and Beverley were connected with the Salem system, but the lack of strength of the mains prevented the full utilization of the additional water supplies, while the bursting of pipes restricted the full use of the water. Furthermore, the companies from the adjoining cities were unable to couple their hose lines to the hydrants because of non-standard, non-uniform, hose couplings, and hydrant connections. In this conflagration the motor apparatus demonstrated not only its increased mobility but the increased convenience and advantage of being able to carry and use liquid fuel instead of requiring wood fences and box boards as was the case with the steam fire engines. A large number of people were rendered homeless through this conflagration, and the militia was summoned to preserve order and to supervise the assigning of shelter and the distribution of relief.

Edison Fire. One of the notable fires of the year was that which took place at the plant of Thomas A. Edison, Inc., at West Orange, N. J., the evening of Dec. 9, 1914. The great amount of damage in this fire aroused interest which was increased by the fact that the concrete buildings, forming a large portion of the plant, were considered fire-proof, yet while the walls remained standing, there was considerable damage done to the buildings as well as the contents. The fire demonstrated once more, that a fire-proof building will act as a stove, if filled with inflammable contents, and that local fire protection and fire resisting walls are as essential as in buildings more combustible, while wooden window sashes and plain glass should be eliminated entirely.

The fire totally destroyed one frame and six brick buildings, but seven concrete buildings remained standing, while the storage battery plant across the street was not damaged. The reasons given for the extent of the disaster and the rapidity of the progress of the fire were the highly inflammable character of the contents of the buildings, and the inadequacy of the water supply. The use of wooden sash and plain glass at the window openings, the lack of fire walls, and the lack of automatic sprinklers, were other contributing causes.

In connection with this fire the preliminary report of Ira H. Woolson, Engineer of the National Board of Fire Underwriters, to that body made shortly after the fire, was of special interest. Professor Woolson refers to the fact that while the concrete structures were seriously damaged, there was no reason why confidence should be lost in buildings of this type. The Edison buildings he stated were in many respects not well constructed, and while the concrete on the whole was of fair quality, considerable variations existed in both quantity and quality of the aggregate used, and this irregularity in composition may have contributed to the failure of the concrete. He criticised the arrangement and the placing of the reënforcement, and at the preliminary examination it could not be determined whether it was due to faulty design or careless workmanship, as a sufficient number of properly tied rods had not been employed, and as there were no single ties to be noted around the vertical rods. The lappings of the rods were carelessly tied down, the reënforcement in the beams improperly spaced, very few stirrups were used, and other defects were noted, which would not be permitted in modern first class reënforced concrete construction. These defects, coupled with the rapid expansion of the structures due to the quick hot fire, were undoubtedly the cause of the failures in the concrete. Professor Woolson noted that a square type of column was not suited to withstand fire, and that if well fastened, round, hooped, columns had been used, the results would have been different to the columns.

Panama-Pacific Exhibition. A central fire and police system was installed during the year in the buildings of the Panama-Pacific International Exposition, consisting of 102 fire alarm boxes, installed throughout the grounds and buildings. These boxes were absolutely non-interfering and successive, and so constructed that nine boxes could be pulled simultaneously and all of them would register in succession their respective signals. The system embraced a central, and full automatic equipment consisting of a 12-circuit switchboard, and an 8-circuit automatic repeater, with 4 local engine house circuits, a signal wheel transmitter, used for transmitting special alarms, a punching register, take-up reels, and an automatic time stamp for recording the exact time when an alarm comes in, the stamp being controlled by a self-winding clock. In addition to the fire alarm boxes, there were 102 seven-call company police telephone and signal boxes, which were mounted on ornamental iron pedestals, surmounted by a red globe on which was etched "Fire Alarm" in white letters. By means of a signal wheel transmitter operated by an electric motor in the central office, code signals could be conveyed from these alarm boxes at night to notify the guards that their services were required.

Fire-Proof Ice-Houses. While the natural ice industry has made little progress in comparison with the artificial, yet fire-proof ice-houses were beginning to take the place of wooden structures among the larger and more progressive companies. The Mountain Ice Company at Lake Hopatcong during the year built a tile and steel building, which not only was fire-proof, but provided increased advantage in the way of insulation. It enabled 90,000 tons of ice to be stored in a building 350 feet wide by 326 feet long, in 10 separate storage rooms, and was provided with modern conveying and transportation machinery, so that the ice could be handled economically and with great facility. The exterior walls were double with an interior space of about 16 inches filled with sawdust up to the loft floor.

Preventing Village Fires. During the year the National Board of Fire Underwriters and the National Fire Protection Association published an ordinance intended for the use of small towns and villages, providing for fire limits and the construction and equipment of buildings. This suggested legislation represented the best practice in building construction, with special reference to the needs and proper protection of small towns, and was designed to prevent hazardous practices and serve as a reasonable regulation of ordinary building construction in places where there was no abnormal congestion of values. The suggested ordinance deals with the limits of height of buildings within the stated fire lines, limit of floor area, the construction of stair and elevator shafts, and means of exit, and the construction of smoke-proof towers or stairways, and in fact summarizes the best building practice that is suitable for smaller cities where the more elaborate regulation and inspection is hardly possible.

Railway Fire Protection. The Railway Fire Protection Association, which was formed in 1913, held its second annual convention at Washington on October 6 and 7. The object of this society is to devise practical, economic, and effective ways and means for the protection of, and the prevention of fire loss to railway property, and to develop standard practices and authoritative measures that will commend themselves to operating officials. During the year the Committee on Fire Hazards published six bulletins which dealt with such subjects as the Construction of Buildings, Care of Property, Lighting, Heating, and Power, the Hazard of Locomotive Sparks, Recommendations in Connection with Chimney Flues and Furnaces, Improved Construction of Boiler Houses, Boiler Settings, and Boiler Stacks, the Storage of Railway Fuses and Torpedoes, and the Storage and Handling of Oil Supplies. The association also has a committee on statistics and forms, several of which were recommended for adoption. This committee reported that in an investigation covering five years and a mileage varying from 27,396 in 1909 to 39,576 in 1913, there have been 10,160 fires, the total loss in which, including railroad property and lading liability, being $5,840,644, an average of $574.86 per fire. The necessity of forming fire fighting brigades and regular controls by railroad employees was emphasized in the report of the committee on fire-fighting organization, while a report on fire-fighting apparatus treated the regular apparatus used or needed at regular freight and passenger stations, as well as at coaling stations, and on engines and cars. This report summarized the fire-fighting practices generally followed on most roads and made recommendations for various improvements.

FISH AND FISHERIES. The report of the United States Commissioner of Fisheries for the fiscal year ending June 30, 1913, appeared in December, 1913, and was the last report available at the time of preparing this article. The report was, as usual, an exhaustive account of the work of the Commission, and should be consulted for detailed information. During the fiscal year 1913, there were distributed of fish, 422,275,973 eggs, 3,421,591,295 fry, and 19,726,114 fingerlings, yearlings, and adults. These were sent to 25 of the United States, to British Columbia, Canada, Germany, India, and Japan. Because of the scarcity of breeding lobsters along the southern New England coast, no attempt was made at hatching them at Woods Hole. Farther north, however, conditions were more favorable, and this work was continued at Gloucester. Maine fishermen reported an increase of lobsters along that coast. The Commissioner emphatically urged the extension of fish cultural work, especially in the oyster industry, pointing out the fact that while oysters have very great economic value, less is spent on their propagation than on the black bass, which are used chiefly for sport.

The condition of the shad fisheries in Chesapeake Bay was reported as unsatisfactory, not enough fish to keep the number constant being allowed to pass the seines each year. Similar injudicious fishing has ruined the sturgeon industry, the only apparent remedy being to prohibit fishing for at least 10 years. The Rumanian government has offered to send fish for restocking from the Danube River and Caspian Sea, and this offer may be accepted. Because of the impossibility of enforcing regulatory laws, the Florida sponge fisheries have practically been worked out, and are now of relatively little importance.

The fish landed at Boston and Gloucester in American vessels, amounted for the fiscal year 1913, to 182,704,059 pounds, with a total valuation of $4,779,259. From March, 1912, to April, 1913, 30,373,396 pounds of salmon, having a value of $2,207,109 were landed at Seattle, Washington.

The report on the oyster fisheries covered the year 1910 for the New England and South Atlantic States; the year 1911 for the middle Atlantic (except Maryland and Virginia); and the year 1912 for Maryland, Virginia, and the Pacific Coast. The total was 32,988,815 bushels, having a value of $15,377,983. For data concerning other fisheries of less value, and for details of the different fisheries, the original report should be consulted.

In 1908 the total value of United States fishery products (excluding Alaska) was $54,030,630. In 1914 the value of Alaskan fishery products exported amounted to $19,027,970. There were in 1913, 21,721 persons employed, and 444 ships, aggregating 93,800 tons.

In England, early in the year, was started a campaign of education among the fishermen, covering not only instruction in the more practical side of the fishing, but also in the theoretical aspects of fish culture. The value of the 1913 fisheries in England and Wales as reported in June, 1914, was £10,337,000. After the breaking out of the war, however, all fish cultural work in England was partially or entirely discontinued, and the North Sea fishery industry has practically been destroyed. For the same reason the work of the "Conseil Permanent International pour l'Exploration de la Mer" has been discontinued. In one of the last reports of this Conseil, Hjort recorded some observations which seemed to him to be of very great practical importance. It is already well known that the age of a fish can be told by counting the rings on its scales. Using this method of determining the age of herrings, Hjort found that more than 50 per cent of the various sizes of herrings taken up to as late as 1914 were of the 1904 hatching. From this he concludes that the renewal of the fish population is not kept up by an annual increase but that periodically there is a year of unusual increase, followed by a number of years when the number is less. Thus it may be possible to predict at any time, the probable course of the fisheries for a number of years in advance.

From New South Wales it was reported that the California Rainbow Trout had been acclimatized there, and that young had been reared.

FISHER, JOHN ARBUTHNOT, FIRST BARON. See WAR OF THE NATIONS.

FISHERIES. See section so entitled under various countries and States of the United States.

FISKE, WILLIAM F. An American entomologist, died in 1914. He was born at Webster, N. H., March 20, 1876, and was educated at the New Hampshire College of Agriculture and Mechanical Arts. He was successively assistant entomologist at the New Hampshire Experiment Station (1897–1901); assistant entomologist for the State of Georgia (1901–03); assistant in forest investigations (1903–06); in charge of the Gypsy Moth Laboratory, Melrose Highlands, Mass., in May, 1906; and afterwards in the Bureau of Entomology, United States Department of Agriculture, Washington. He was a member of the American Association for the Advancement of Science, American Society of Economic Entomology, Boston Society of Natural History, and various other entomological and natural history societies.

FISK UNIVERSITY. An institution of higher education for the colored race, at Nashville, Tenn., founded in 1866. The enrollment in all departments of the university in the autumn of 1914 was 477. Of these, 156 were in the college department, 155 in the preparatory school, and 123 in the training school. During the year Dean C. W. Morrow was appointed acting president. The productive funds amounted at the end of the year 1913–14 to $130,745, and the income from endowment to about $5000. The library contains 11,000 volumes.

FLAX. The world's average annual production of flaxseed is about 100,000,000 bushels, and of flax fibre over 1,000,000,000 pounds. However, as high as 130,000,000 bushels of linseed, and over 2,000,000,000 pounds of fibre have been produced. Although estimates of the production in 1914 were lacking, as the result largely of the disturbed political conditions in Europe, the figures at hand indicated a smaller crop than in 1913. The production of flaxseed in British India in 1914 was estimated at 15,300,000 bushels, in Rumania at 150,000 bushels, and in Italy at 315,000 bushels. Based on the crop of 1913, the production of British India was 71 per cent, of the United States 94 per cent, of Canada 43 per cent, of Italy 78 per cent, and of Rumania only 28 per cent. For Russia, which ranks with the United States, Argentina, and British India as the principal linseed producing countries, data were not available. Argentina produced in the crop season of 1913–14, as estimated by the Argentine Ministry of Agriculture, 38,974,000 bushels on 2,614,000 acres. The Canadian crop of 1914 was much injured by drouth in Saskatchewan, the principal producing province, and was reported as only 7,535,000 bushels, the average yield per acre being about 7 bushels. Estimates published by the Department of Agriculture placed the flaxseed crop of the United States in 1914 at 15,559,000 bushels, the acreage at 1,885,000 acres, and the average yield per acre at 8.3 bushels. The total value of the crop based on a bushel value of $1.26, the price received by farmers on December 1, was given as $19,540,000. As compared with 1913 this is a reduction of 406,000 acres in area, of 2,294,000 bushels in yield, and of $1,859,000 in farm value.

FLEAS. See INSECTS AND THE PROPAGATION OF DISEASE.

FLOOD PREVENTION. The recent prevalence of serious and disastrous floods such as those in 1913, and in earlier years, not only in the United States, but in Europe and Asia, attracted increased attention to methods for the prevention or minimization of their effects. In the year 1914 important investigations were in progress, and remedial measures undertaken, the more important of which are briefly summarized below.

During the year a report of the special board of the Corps of Engineers, U. S. Army, was submitted by the Secretary of War to Congress. This board, appointed April 12, 1913, consisted of Lieut. Cols. F. R. Shunk and Henry Jervey, Majs. Charles S. Bromwell, John C. Oakes, Frederick W. Alstaetter and Louis H. Rand, and the report, abstracted in the *Engineering Record*, for May 2, 1914, is an important and valuable document. It pointed out that in flood prevention reservoirs, both impeding and storage, as well as unobstructed channels were all proper methods of river regulation, but that the application of any or all of these methods must depend on local conditions and a careful study of the problems. One of the general causes of floods, such as those that occurred in the Ohio Valley in 1913, was the obstructions in the river channels, and a large amount of damage was due to the fact that buildings were knowingly erected and inhabited in territory subjected to inundation by high water. The conclusions of the board were that forestation and special methods of plowing were not usually productive of practical results, to an extent that would make it profitable to consider their employment. Reservoirs could be used where good sites were obtainable at reasonable cost, and prompt and certain relief would be afforded by moving structures and bulky material out of the flood area, while by removing river obstructions flood heights and velocities could be reduced greatly. This last method should be adopted so far as is practicable, and new obstructions should be prevented. Further auxiliary channels failing, parallel channels and cut-offs could be used in certain cases, as well as properly designed levees. No one method of flood control could be recommended to the exclusion of others, and each locality must be considered separately to determine the best plan.

It was the opinion of the Mississippi River Commission and of the Chief of Engineers of the United States Army, that the only practicable method of flood protection in the lower Mississippi Valley was by the construction of an adequate system of well-designed levees, supplemented by bank production. This question was actively discussed during the year and many varying opinions were held. In Sacramento Valley, California, the project for flood protection involved an extensive use of auxiliary channels, while at Galveston, Texas, the flood protection had been secured by raising the grade of the city. The Army Board of Engineers emphasized the fact that when a definite project had been prepared it could be undertaken without new and expensive organization, and that when an appropriation was required, conditions were such that it could be presented to Congress for its consideration in an intelligent, concise, and concrete manner. This, of course, brings up the question of the necessity and distribution of such public works, and the fact that such necessary improvements might fall in the same class as the River and Harbor work, for which for many years appropriations have been made by the government, but which confessedly have not been so distributed that the projects could be carried on with the greatest harmony and economy, as would appear with engineering work organized on a different basis and not dependent on the votes of the National Legislature.

In the above connection an important paper on "Methods of Flood Prevention" was presented April 21 before the Engineers' and Architects' Club of Louisville, Ky., by Maj. John C. Oakes, C. E., U. S. A., and is abstracted in the *Engineering News* for May 7, 1914. Major Oakes discussed the work of the National government and especially of the Army Board of Flood Prevention, which, after the great floods of 1913, had been actively investigating the problem in the Ohio River basin and elsewhere. He discussed the proposals of the Pittsburgh Flood Commission and of other agencies, and states that before any plan should be adopted involving as it would immense expense, the whole situation thoroughly should be canvassed. In discussing the construction of reservoirs, which many authorities advocated, he referred to the small value of undeveloped water power and the conflict between the use of reservoirs for flood storage, and for power development and maintenance of low water flow.

In distinction to the work of the National government local schemes were also discussed. Shortly after the Ohio River valley flood of March, 1913, the Dayton Flood Prevention Committee called in consulting engineers to devise some plan whereby protection from further catastrophes might be insured. The Morgan Engineering Company of Memphis, Tenn., in coöperation with D. W. Mead, J. W. Alvord, and S. M. Woodward, consulting engineers, after careful study determined that the best solution of the problem was a reservoir or detention basin system, and this decision was approved by a special board of consulting engineers, composed of retired United States Army Engineers, and other well-known authorities in hydrographic and river engineering. This board decided that floods as great as that of 1913 were liable to occur at any time, and that prevention measures should be undertaken to control floods even 20 per cent greater than that of 1913; that the enlargement of the river channel of the Miami Valley alone was impracticable as a permanent flood protection; and that a detention basin supplemented by limited channel improvements offered a solution of the problem. The flooded area of the Miami Valley, above the White River, should be considered as a unit in working out any such plan, and the works should be constructed so massive and substantial as to justify confidence in their integrity, and satisfy every reasonable question of suitability. This interesting report was summarized in the *Engineering Record* for Aug. 8, 1914, and deals with the various remedial measures that have been proposed as well as the plans suggested. The detention basins proposed would be constructed through the use of river dams with spillways of ample proportions, excavated in and founded upon solid rock, while there should be ample outlet conduits or tunnels to pass the ordinary flow, without any accumulation behind the dams. The cost of the completed scheme of flood protection by channel deepening and widening alone for the entire river would probably amount to about $100,000,000, but by the system of detention basins, with limited channel improvements, the cost would probably be placed between $18,000,000 and $20,000,000, with a comparatively light cost of maintenance. As it is, there would be involved in the channel enlargement and improvement not only the excavation, but the moving of existing buildings, the readjustment and rebuilding of sewerage systems and pipes, changing the grades of the streets or repairing the streets and sidewalks, and the reconstruction of railway and highway bridges.

An interesting paper dealing with flood prevention was presented during the year by Sir William Willcox, the eminent English engineer who constructed the Assuan Dam and other Egyptian engineering projects, and was engaged in the work on the Euphrates. The title of the paper was "How the Ancients Would Have Controlled the Mississippi and Its Tributaries." He treats in a dispassionate way the conditions existing on the Mississippi River, as described by reports and observations; and then from his observations in Mesopotamia and elsewhere discusses the method that would have been employed by early workers. He believes they would have protected the salient bends, and there would have been precautions to avoid the breaking away of the levees; that cut-offs would have been allowed by ancient engineers, and they would have prevented the river cutting away inside the channels. The English engineer also believed that reservoirs on the Mississippi River were needed, and that various basins should be used, and that the upper quarter of the St. Francis basin should be protected with levees, permitting three-fourths of this basin to be put under water, so that it would protect the Mississippi River until the river had widened its channel. In the meantime transverse dikes could be built from the river to the hills, just as was done by the ancient Egyptians, so that the muddy waters of the Mississippi would flow over this basin, improving the land and making it richer in the future. Sir William Willcox's paper dealt not only with the flood situation in the Mississippi River, but up the Ohio valley as far as Pittsburgh, and it aroused considerable discussion, not all of the ideas of the European engineer being approved by American workers in this field.

Previous to the outbreak of the war, the City of Paris voted $7,000,000 for its share in the work of flood prevention, recommended by a special commission appointed by the State after the 1910 inundation. The exact nature of the improvements to be undertaken had been a matter of controversy between various engineering authorities, and also between the state and the municipality and the Seine Department, as there was a considerable divergence of views, and the work was of enormous scope. An agreement was finally reached between the city and the minister of public works in December, 1913, for a plan which involved the enlargement of the Seine arm and the deepening of the river at Suresne, as a beginning of operations for which the municipality formerly engaged to furnish $7,000,000, one-half of the amount needed, the other half to be supplied by the State. There was being considered in the National Assembly a diversion canal for the Marne River, while the municipality decided to carry out an extensive programme for increasing the height of the Seine embankments above the 1910 freshet level at a cost of $4,400,000, and to erect temporary barrages at other points, where the immediate need of such protection existed. Previous to the outbreak of the war, some of the plans for this work were being drawn and in some cases work had actually been started. In this connection also various urgent work on pavements, waterpiping, and sewers was undertaken, and that this was quite necessary was demonstrated by the flood of June 15, 1914, which undermined a portion of the city, especially the streets involved in the underground working and excavations for the new subways. Much damage was done by extensive cavings in of the streets, and it was realized that the sewer system was inadequate to take care of the flood resulting from such a violent storm as occurred on June 15. These and other improvements were being undertaken in connection with new subway construction, and at the same time the Police Department organized a system of mobilization, so as to bring help to all threatening points along the river at the time of the first alarm. Considerable work of investigation was also done with a system of absorption wells, for draining the output of the river, and some engineers reported that it would be advantageous to use the soil as a reservoir for surplus water.

During the year an interesting report on flood prevention in China was made by a board of American engineers composed of William L. Sibert, Daniel W. Mead, and Arthur P. Davis, appointed by the American National Red Cross, in accordance with an arrangement with the Republic of China. From time to time the Huai River, the Yellow River, and other streams in China have overflowed or changed their direction and the resulting floods have caused widespread destruction of life and property, this having been a serious problem for China for more than ten centuries. The board recommended a project for the Huai River conservancy district, which would involve the expenditure of $30,000,000, and which would require six years to complete. This conservancy district is divided into two parts separated by the old channel of the Yellow River. The river's drainage basin lies in the southern half of the great plain of Eastern China, which occupies a semicircular area 600 miles in radius. The Yellow River is engaged in developing a normal delta plain, while the Chinese are attempting to confine this stream within limited bounds, so that they may cultivate as much as possible of Eastern China and support thereby a comparatively dense population. Thousands of lives have been lost by drowning, and all attempts to mitigate the destruction have been practically without avail. The board of engineers was of the opinion that it was not feasible to attempt to divide the waters of the Huai River, but that they should go into the Yangtze near Chinkiang, and that such waters should be diverted into Paoying and Kaoyu Lakes, so as to make possible the reclamation of Hungtse Lake with a channel constructed across it with high dikes, through which can be passed to Paoying Lake the waters of Huai and the drainage waters from a large part of the territory annually flooded, bounded by Hungtse Lake, the old Yellow River bed, the Tientsin-Pukow Railway, and the Huai River below Pengpu. This would involve considerable dike construction with regulating works, and an extensive system of canals and laterals whereby a large section of the country would be irrigated. As considerable land would be reclaimed or benefited, the value aggregating an amount of some $48,000,000, and the grand canal and other canals would return increased revenues, while there would be additional taxes on the land, it was believed that the project was feasible commercially.

FLORIDA. POPULATION. The estimated population of the State on July 1, 1914, was 848,111. The population in 1910 was 752,619.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	700,000	11,200,000	$8,960,000
	1913	675,000	10,125,000	8,802,000
Oats	1914	50,000	900,000	680,000
	1913	50,000	900,000	680,000
Rice	1914	400,000	10,000	7,000
	1913	400,000	10,000	6,000
Potatoes	1914	18,000	1,040,000	1,175,000
	1913	12,000	912,000	1,067,000
Hay	1914	48,000	*a* 65,000	1,118,000
	1913	47,000	63,000	1,147,000
Tobacco	1914	4,800	*b* 4,800,000	1,290,000
	1913	4,000	4,000,000	1,240,000
Cotton	1914	195,000	*c* 75,000	4,401,000
	1913	188,000	59,000	4,792,000

a Tons. *b* Pounds. *c* Bales.

MINERAL PRODUCTION. The only importance of Florida as a mineral-producing State lies in its large deposits of phosphate rock. In the quantity and value of phosphate rock produced, it ranks first among all the States, and that item represents 90 per cent of the value of the State's total mineral output. The value of the production approximates $10,000,000 annually. In 1913 the output amounted to 2,545,276 long tons, valued at $9,563,084, compared with 2,406,899 long tons, valued at $9,461,297, in 1912. Land pebble constitutes approximately 80 per cent of the total quantity of phosphate rock produced, but only about two-thirds of the total value. Hard rock is generally of higher grade than pebble, and brings about twice as much per ton to the producers. The total production of hard rock in 1913 was 489,794 long tons, valued at $2,987,274. The production of pebble was 2,055,482 long tons, valued at $6,575,810. Florida contributes more than 80 per cent of the total phosphate rock production in the United States. It is also the first State in the production of fuller's earth. It leads also in the production of ball clay, a highly plastic clay used in giving plasticity to the body of better grades of pottery. The manufactured clay products, consisting chiefly of common brick, were valued at $253,344 in 1913, compared with $272,766 in 1912. Other mineral substances of commercial importance are limestone, mineral waters, sand and gravel, and building stone. The total value of the mineral products in 1913 was $10,508,016, as compared with $10,272,594 in 1912.

FINANCE. The report of the State Treasurer showed a balance on Jan. 1, 1914, of $1,483,699. The receipts during the year amounted to $3,429,784, and the disbursements to $3,390,685, leaving a balance on Dec. 31, 1914, of $1,522,769. The public debt at the end of the year amounted to $601,567. It consisted solely of refunded bonds bearing interest at the rate of 3 per cent, all of which are held by the educational funds of the State.

TRANSPORTATION. The total railway mileage at the end of the fiscal year, June 30, 1913, amounted to 5550, an increase of 28 miles over 1912. Of this, 3655 miles was main line, 835 miles yard track and sidings, and 893 miles branches and spurs. The roads having the longest mileage of main line were the Seaboard Air Line, 947; the Atlantic Coast Line, 878; the Florida East Coast, 522; the Louisville and Nashville, 216; and the Georgia Southern and Florida, 152.

EDUCATION. The total school population on July 1, 1912, the latest date for which authoritative statistics are available, was 264,710. The total enrollment on July 1, 1914, was 177,154. The average daily attendance for the same date was 126,565. The teachers numbered 4882, of whom 3808 were females, and 1074 males. The white teachers numbered 3823, and the negro teachers 1059. The average salary of male teachers was $58.56 per month; of female teachers $39.70, and of all teachers $49.13. The Legislature of 1913 passed a measure making an annual appropriation for two rural school inspectors. There was also a law passed granting State certificates to graduates of the University of Florida, and the State College for Women from the collegiate and normal departments; also to graduates of the independent universities and colleges of the State upon certain conditions. A compulsory education bill was introduced in the Legislature, but failed of passage. A similar bill will be introduced in the session of 1915.

CHARITIES AND CORRECTIONS. The State institutions include the Deaf, Dumb, and Blind Institute, the Confederate Soldiers' Home, the State Asylums for the Insane, the State Prisons, and the State Industrial School for Boys. The latter is composed of two schools, one for white, and the other for colored boys. In this institution the average number of inmates is from 175 to 200.

POLITICS AND GOVERNMENT. There was little of political importance in the State during the year. The Legislature did not meet, and there was no election for Governor or important State officers. In the Democratic primaries held on June 8, Sen. Duncan U. Fletcher was renominated, and on November 3 he was reëlected practically without opposition.

In the same election S. M. Sparkman of the first district, Frank Clark of the second, and Emmitt Wilson of the third, were reëlected to Congress, and W. J. Sears of Kissimmee was elected as Congressman from the fourth district over Claude L'Engle, who had held the position for one term.

State officers were elected as follows: W. A. McRea, Commissioner of Agriculture; W. H. Ellis and T. M. Shackleford as justices of the State Supreme Court; N. A. Blitch and R. Hudson Burr as railroad commissioners.

STATE GOVERNMENT. Governor, Park M. Trammell; Secretary of State, H. C. Crawford; Treasurer, J. C. Luning; Comptroller, W. V Knott; Attorney-General, Thomas F. West; Auditor, Ernest Amos; Adjutant-General, J. C. R. Foster; Superintendent of Public Instruction, W. N. Sheats; Commissioner of Agriculture, W. A. McRea—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, J. B. Whitfield; Justices, W. A. Hocker, R. F. Taylor, T. M. Shackleford, and R. S. Cockrell; Clerk, Milton H. Mabry—all Democrats.

STATE LEGISLATURE, 1915. Both Houses Democratic.

The State representatives in Congress will be found in the article UNITED STATES, section *Congress*.

FLORIDA, UNIVERSITY OF. A State institution for higher learning at Gainesville, Fla., founded in 1905. The students enrolled in all departments of the university in the autumn of 1914 were as follows: Graduate School, 11; College of Arts and Sciences, 58; College of Agriculture, 73; College of Engineering, 51; College of Law, 77; Teachers College and Normal School, 94. The faculty numbered 51. During the year C. J. McCoy was appointed instructor in gymnastics to succeed G. E. Pyle. N. L. T. Nelson, Ph.D., was appointed instructor in civil engineering to succeed Ira D. Odle. F. M. Rast was appointed instructor in soils and fertilizers to succeed J. F. Duggar, Jr. The university received $1850 from the general education board. The productive funds amount to about $83,028. The university is a part of the educational system of the State, and is supported chiefly by appropriation from the State Legislature. The library contains about 15,000 volumes. The president is A. A. Murphree, LL.D.

FLOUR. See FOOD AND NUTRITION.

FLY, HOUSE. See ENTOMOLOGY.

FOOD AND NUTRITION. FOOD INSPECTION. Only 436 cases were reported for prosecution under the U. S. Food and Drugs Act. This reduction of over 50 per cent from the previous year was ascribed in part to a better understanding of the law and the abandonment of many forms of adulteration and misbranding. There were 89 convictions under the meat inspection act, and nearly one-third of the 14,000 imported foods examined were denied entry.

Decisions adverse to the government were rendered in the long-contested "bleached flour" and "Coca Cola" cases. In the former, the Supreme Court held that a food is not adulterated under the law, even though it contains "a small addition of poisonous or deleterious ingredients, . . . if it cannot by any possibility, when the facts are reasonably considered, injure the health of any consumer."

Regulations as to the labeling of package goods were promulgated, taking effect September 3. The use on labels of such legends as "Guaranteed under the Food and Drugs Act" was prohibited after Nov. 1, 1916, on the ground that this practice had misled the public into a belief that the guarantee was by the government.

Massachusetts and Rhode Island were added to the States requiring labeling as to the net weight of packages. Massachusetts also enacted a new sausage law, and Rhode Island provided for meat and butter inspection. New Jersey licensed its egg-breaking establishments, and Maryland began sanitary inspections of canneries, bakeries, creameries, hotels, restaurants, slaughterhouses, and other food-producing enterprises. Rhode Island prohibited misleading claims for the curative properties of drugs, and the Philippines also required patent-medicine labels to show formulas. Canada forbade the terms "maple" and "honey" in mixtures, prohibited all trade in adulterated dairy products, butter substitutes, and renovated butter, and licensed cold storage warehouses holding foods over 21 days, limiting the storage period, and requiring labeling to show the dates in storage.

COST OF FOOD. A general increase in food prices followed the outbreak of the European War. *Bradstreet's* recorded for August 15 the highest commodity index in its history, but decreases followed, and on December 1 the index showed a drop of 1 per cent from the year 1913. Wheat, oats, rye, flour, live cattle and sheep, milk, beef, sugar, molasses, beans, and peas were still higher than in 1913, but corn, pork, eggs, lard, coffee, rice, potatoes, and cranberries were considerably lower. The sharp advance on some commodities in August led to much popular protest, and indictments were obtained in Washington and other cities against jobbers and others for alleged conspiracy.

The conviction became stronger that one remedy for high prices in general, lay in correcting faulty methods of distribution. The Department of Agriculture and the Post Office Department obtained some promising results in developing the parcel post for direct shipments from producer to consumer, and some of the express companies undertook additional service in this direction. Efforts to organize coöperative selling and purchasing associations made considerable progress, but perhaps the principal discovery of the year was the largeness and complexity of the subject. See AGRICULTURE, *Conservation of Food Supply*.

NUTRITION STUDIES. The U. S. Department of Agriculture worked on the more effective utilization of farm products, as by the drying of cull potatoes, producing citric acid and lemon oil from citrus fruits, and making from sweet cider a table sirup, and a concentrated cider which ferments very slowly at refrigerator temperatures and can be easily transported and diluted as desired. Work was also continued to promote the wider use of corn meal, Kafir corn, honey, and various animal and vegetable fats, and in studies of candy-making, the manufacture of jams, jellies, etc., and the development of improved methods of handling fish, shell-fish, poultry, and eggs.

The high nutritive value of cottonseed meal as human food was again demonstrated by the Texas Experiment Station. Its limited employment in cakes and bread, using in the usual recipes one part to four of corn meal or wheat flour was suggested as a meat substitute. Elsewhere, the value of the grain sorghums was shown.

Commercial condensed soups, even though labeled "beef" and "chicken," too frequently consisted chiefly of water, barley, rice, or other vegetable material. Powdered and cube sugars were generally free from adulteration, but sold at a price far above their increased cost of manufacture.

Studies of coffee making favored the filtration method, care being taken to use the freshly powdered berry and water at the full boiling temperature. Treating the coffee bean with finely powdered clay to remove oils was suggested as improving the quality and decreasing digestive disturbances. Straining was preferred for clarifying to adding eggs. Coffee drinking after meals was found to be justified in many cases by reason of its stimulating effect upon the vital processes.

The United States Referee Board reported that alum baking powders were not found to be injurious to health in small quantities. They were not believed to be more harmful than other baking powders, but inasmuch as all introduce into the alimentary tract a saline cathartic, moderation in the use of foods leavened with baking powder is suggested.

Mainly for sanitary reasons, the establishment of municipal abattoirs was advocated by the Kentucky Experiment Station. Large numbers of bacteria were found in commercial Hamburger steak, and the North Dakota Station showed the need of great care in sterilizing bottles used for carbonated beverages. On the other hand, flours properly stored were found to deteriorate very slightly on storage for several months, and strictly fresh fish, promptly frozen and properly handled, kept for two years without important chemical changes or depreciation in nutritive value. The wrapping of bread upon cooling to room temperature was found to keep down its bacterial content, as well as to preserve its freshness for days.

Studies of the various proteins by Osborne et al., again showed wide differences as to their utilization by the body for growth, and indicated that their value for this purpose depends quite largely on their content of lysin; such substances as lactalbumin, casein, and egg vitellin being relatively well supplied, while there is none in the zein of maize. Others attributed the superiority of breast feeding to the absence of foreign proteins, but it was also found that when milk of another species was used the raw milk gave no better and sometimes inferior gains than pasteurized milk. Considerable differences were also found in the nutritive value of different fats, and Osborne et al., suggested that the high nutritive potency long popularly ascribed to butter, egg-yolk, and cod-liver oil may have a basis in their distinctive fatty acids.

The vexed questions of whole vs. white flour, and polished vs. unpolished rice were again under discussion. Loew suggested the use of calcium chloride in bread making to make up any deficiency of lime. Hill claimed that the milling processes are injurious by removing "vitamins," to the lack of which Funk ascribed such diseases as pellagra and beri-beri. There was also evidence, however, that the cause of these diseases was by no means fully understood, and it was generally admitted that the deficiency of either vitamins or ash will seldom be serious if the ordinary mixed diet is followed.

Additional dietary studies with Japanese monks indicated that their absolute vegetarian diet, supplying an average of 69 gms. of protein and 2592 calories of energy per day, sufficed to maintain health, but it is pointed out that the whole body and especially the digestive apparatus was accustomed to such a diet. On the other hand, Eskimos sometimes consumed as high as 4 pounds of seal meat, supplying 510 gms. of protein and 218 gms. of fat per day, and were likewise in good health. That muscular activity exercises a great influence on body requirements was shown in tests where the energy expenditures for work ranged from 4 calories per hour with a woman sewing by hand to 406 calories with a wood sawyer. An increase of carbon dioxide was also found in a subject memorizing meaningless syllables, which was attributed partly to the incidental muscular movements but mainly to psycho-physiological processes.

Bibliography. Some of the more important books of 1914 were as follows: E. H. S. Bailey, *The Source, Chemistry, and Use of Food Products* (Philadelphia); H. W. Wiley, *1001 Tests of Foods, Beverages, and Toilet Accessories* (New York); Janet McK. Hill, *The American Cook Book* (Boston); Mildred Maddocks, *The Pure Food Cook Book* (New York); Marion H. Neil, *Canning, Preserving, and Pickling* (Philadelphia); G. Lusk, *The Fundamental Basis of Nutrition* (New Haven and London); Lichtenfelt, *Die Geschichte der Ernahrung* (Berlin); and M. Rubner, *Wandlungen in der Volksernahrung* (Leipzig). See also AGRICULTURE; CARNEGIE INSTITUTION.

FOOT-AND-MOUTH DISEASE. See STOCK RAISING, and VETERINARY MEDICINE.

FOOTBALL. Harvard for the third year in succession won the Eastern intercollegiate football championship. As in 1913, the Crimson also went through the season without defeat. The wonderful showing of Harvard was made despite the absence of Charles E. Brickley, the captain and star drop kicker who scored all the points in the important games of 1913. Brickley underwent an operation for appendicitis just before the season opened, and did not get into the game until the last few moments of the contest with Yale. Eddie Mahan and "Tack" Hardwick, however, stepped into the breach, and by their brilliant playing offset Brickley's loss.

Washington and Jefferson, and Brown, put up the best battles against Harvard, the former being beaten by only one point, and the latter gaining a scoreless tie. Penn State, too, tied the Cambridge eleven. The Crimson, however, did not have its full strength in the field in these games. The contests with Princeton and Yale resulted in easy victories. That between the Crimson and the Blue, held in the new Yale Bowl, was witnessed by 70,000 persons, the largest gathering of its kind ever assembled. The score, 36 to 0, established another new record, for never before in the history of football relations between the two institutions had so crushing a defeat been administered.

The ranking of other Eastern teams presents its usual difficulties. Some experts placed Dartmouth second, while others gave this honor to Washington and Jefferson, which defeated Yale and lost only to Harvard. The Yale team was a disappointment to its followers, although it was generally conceded that the new coaching system put into vogue by Frank Hinkey was bound to produce satisfactory results in time. Yale resorted to the open game more frequently than the other big teams, and during the early part of the season made an excellent showing. In the crucial test—the game with Harvard—the open attack failed lamentably, the Crimson players having no difficulty in breaking through the Blue line, and smearing it before it was really under way.

Princeton, with perhaps the best material to work with possessed by any college, turned out a most unsatisfactory eleven and it is expected that another year will see a different coaching system at work. The Tigers showed their real strength in the last period of the game with Yale, when by a series of brilliant rushes down the field they almost snatched victory from defeat. Cornell after a poor start came to life in the latter part of the season, and triumphed over Brown, Michigan, and Pennsylvania. The only blot on Dartmouth's record was the defeat suffered at the hands of Princeton. Rutgers under the tutelage of Foster Sanford, the old Yale forward, turned out the strongest team in its history.

West Point played through its schedule without defeat, but in the main met weak opposition. Other teams deserving honorable mention are the University of Pittsburgh, Lehigh, Syracuse, Penn State, Williams, Trinity, and Union. Of the Western college teams, Illinois made the best showing. A summary of the games played by the leading colleges follows:

Harvard 44, Bates 0; Harvard 10, Washington and Jefferson 9; Harvard 13, Tufts 6; Harvard 13, Penn State 13; Harvard 7, Michigan 0; Harvard 20, Princeton 0; Harvard 0, Brown 0; Harvard 36, Yale 0.

Dartmouth 21, Williams 3; Dartmouth 42, Vermont 0; Dartmouth 12, Princeton 16; Dartmouth 66, Tufts 0; Dartmouth 41, Pennsylvania 0; Dartmouth 40, Syracuse 0.

Washington and Jefferson 105, Dickinson 0; Washington and Jefferson 9, Harvard 10; Washington and Jefferson 13, Yale 7; Washington and Jefferson 13, Pittsburgh 10; Washington and Jefferson 14, Georgetown 6; Washington and Jefferson 34, Bucknell 0; Washington and Jefferson 20, Rutgers 13.

Cornell 28, Ursinus 0; Cornell 3, Pittsburgh 9; Cornell 3, Colgate 7; Cornell 21, Carlisle Indians 0; Cornell 48, Bucknell 0; Cornell 28, Brown 7; Cornell 48, Holy Cross 3; Cornell 26, Franklin and Marshall 3; Cornell 26, Michigan 13; Cornell 24, Pennsylvania 12.

Yale 20, Maine 0; Yale 21, Virginia 0; Yale 20, Lehigh 3; Yale 7, Washington and Jefferson 13; Yale 49, Colgate 7; Yale 14, Brown 6; Yale 19, Princeton 14; Yale 0, Harvard 36.

Princeton 12, Rutgers 0; Princeton 10, Bucknell 0; Princeton 12, Syracuse 7; Princeton 16, Lafayette 0; Princeton 16, Dartmouth 12; Princeton 7, Williams 7; Princeton 0, Harvard 20; Princeton 14, Yale 19.

Brown 24, Norwich 0; Brown 20, Rhode Island State 0; Brown 0, Amherst 0; Brown 16, Wesleyan 0; Brown 7, Cornell 28; Brown 12, Vermont 9; Brown 6, Yale 14; Brown 0, Harvard 0; Brown 20, Carlisle Indians 14.

The "All-American" eleven as picked by Walter Camp was made up as follows: Ends, Hardwick of Harvard, and O'Hearn of Cornell; tackles, Ballin of Princeton, and Trumbull of Harvard; guards, Pennock of Harvard, and Chapman of Illinois; centre, McEwan of West Point; quarter back, Ghee of Dartmouth; half backs, Maultbetsch of Michigan, and Bradlee of Harvard; full back, Mahan of Harvard.

There were twelve deaths attributed to football in 1914, while 179 players were reported as injured. According to Parke H. Davis, football was played by 450 colleges, 6000 secondary schools, and 1500 teams not connected with educational institutions. Thirty-four thousand games were contested, 152,000 players taking part. The estimated number of persons attending these games is 6,292,000.

Association football, or soccer, greatly increased in popularity in the United States during the year 1914. This was chiefly due to the efficient work of the recently organized United States of America Football Association, which placed the sport on the highest plane it had ever attained. In England the game was generally played, despite the fact that the players, both professional and amateur, were severely criticised on the ground that the army needed their services.

The Brooklyn Field Club won the first series, or cup tie contest, for the U. S. National Trophy in defeating the Brooklyn Celtics by a score of 1 to 0. The same eleven also captured the championship of the National Football League. The Bethlehem Football Club of Bethlehem, Pa., carried off the American Football Association cup by defeating Tacony at Newark. The score was 1 to 0. The Brooklyn Celtics finished first in the New York State Football League. The intercollegiate championship was competed for twice, Harvard winning in the spring, and Pennsylvania in the fall.

FORD MOTOR COMPANY. See FINANCIAL REVIEW.

FOREIGN RELATIONS. See UNITED STATES.

FOREIGN TRADE. See FINANCIAL REVIEW.

FORESTRY. The year 1914 was marked by a striking demonstration of the value of various accepted systems for protecting forests from fire. Light snows in the great forest regions of the

United States and Canada warned government organizations and private timber protective associations to prepare early for a bad fire season. Marked improvements were made in means of communicating with fire-fighting headquarters, more telephone lines to mountain lookouts were built, more roads and trails for quick access to danger points were opened, and more money was spent than in any previous year. In Western Canada wireless telegraphy was used to report fires, and many Indians were enlisted as fire rangers. In the West the automobile proved an economical and efficient means of transporting fire fighters. A greater number of fires occurred than for many years past, but the rapidity with which fires were reported and controlled resulted in a relatively small loss of valuable timber. Most of the large fires were confined to areas where they did but little damage. With the recent addition of Michigan, eighteen States are now coöperating with the Federal Government in protecting the watersheds of navigable streams from fire. One hundred thousand dollars were allotted to this work in the Agricultural Appropriation Act of 1914–15. The coöperating States appropriated $450,000 for the same period. The chief lesson learned from the year's fire work is the need of arranging for emergency funds to meet unusually severe fire conditions.

At the annual meeting of the American Forestry Association, Washington, D. C., Jan. 14, 1914, Dr. Henry S. Drinker of Lehigh University was reëlected president. A platform of principles and policies was unanimously adopted. The association essentially declared itself to be a voluntary and independent organization, with no official connection with any Federal or State department or policy, and devoted to the inculcation and spread of a forest policy on a scale adequate for the economic needs of the country. While recognizing the need of Federal and State forestry with adequate appropriations for the same, the association, at the same time, has agreed to actively support a number of policies looking to development of private forestry. Among these policies may be mentioned the acquirement of waste lands by long-lived corporations for forest planting, and also planting by private owners, where profitable, and encouragement of natural regeneration; forest taxation reforms removing unjust burdens from owners of growing timber; closer utilization in logging and manufacturing without loss to owner and aid to lumbermen in achieving this; cutting of mature timber where and as the domestic market demands it, except on areas maintained for park and scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds or on behalf of any public interest; equal protection to the lumber industry and to public interests in legislation affecting private timber land operations; and classification by experts of lands best suited for farming and those best suited for forestry, and liberal National and State appropriations for this work.

National Forest Service. Systematic land classification, with special reference to the elimination of lands suitable for agriculture, is now under way on 100 of the 163 National Forests. In consequence of this work, which was begun in 1909, over 10,000,000 acres have been eliminated from the forests. Of this amount, 1,684,069 acres had been opened to settlement, under the Forest Homestead Law, on June 30, 1914. A number of prior claims to forest lands were adjusted and some exchanges of public land for private land of equal value were made in order to consolidate both government and private holdings. The result of all these activities was to leave within the National Forest boundaries on June 30, 1914, 185,321,202 acres, of which 21,472,672 acres are private land.

On recommendation of the Forest Service, the National Forest Reservation Commission approved for purchase under the Weeks Law (see Forestry, 1912) tracts aggregating 391,114 acres, making a total approved area of 1,104,529 acres in the Southern Appalachian and the White Mountains. The most important acquisition was the Pisgah Forest of 86,700 acres in North Carolina. This forest had already been developed into one of the finest forest properties in the country by the late George W. Vanderbilt. The purchase was made possible by the generosity of Mrs. Vanderbilt, who accepted the price of $5 an acre because she wished to perpetuate her husband's pioneer work in forest conservation and to insure the use and enjoyment of the forest for the American people for all time. In addition to its use for watershed protection, it is proposed to make Pisgah Forest a game refuge for the preservation of the fauna of the eastern mountains. The tract is already well-stocked with game and fish.

The cost of administration, protection, and permanent improvements on the National Forests for 1914 was approximately $5,370,000. The receipts were: Timber sold, $1,304,053.56; grazing, $1,002,347.59; special uses, $131,309.06; total, $2,437,710.21. Of these receipts, 25 per cent is payable to the States in which the forests are situated for county schools and roads. An additional 10 per cent must be used by the Secretary of Agriculture in building roads and trails on the National Forests for the benefit of the public. The estimated value of all improvements on the National Forests at the close of the year was $4,553,453. Of this amount, $3,116,937, or 69 per cent, represents works of communication and protection.

Experiments on the best methods of reforestation have shown almost uniformly that planting nursery-grown trees is a cheaper method than direct sowing of tree seed. The Forest Service has completed adequate nursery equipment to conduct planting operations on a large scale. Fourteen thousand acres were planted during the year, while but 6400 acres were seeded. In the future it is planned to restock approximately 14,000 acres annually by planting, and to reduce direct seeding to about 2500 acres. Studies in progress at the forest experiment stations included 144 of reforestation, 38 of forest management, 4 of forest influences, 15 of forest mensuration, and 14 of forest protection. Among the results secured in these investigations, it has been found that western white pine seed retains its vitality in the chaff and litter beneath mature stands from one to four years, and germinates when the ground is exposed to direct light by cutting. Observations of the effects of forest cover on stream flow and erosion have shown that Rocky Mountain watersheds, at elevations between 9000 and 11,000 feet, discharge through streams only about 29 per cent of the water which falls upon them in the form of rain and snow. A new and much shorter method of finding the cubic contents of trees was tested on nine native species with very satisfactory results, and tables were prepared which will save a large part of the time hitherto required to measure the volume of felled trees. The study of basket willow culture was substantially completed. This work has demonstrated the value of willow culture as a means of utilizing overflow lands not suited for other crops. Over 1,750,000 willow cuttings have thus far been distributed to State experiment stations, forest schools, and individuals. The work of distribution will be continued.

LEGISLATION. Massachusetts enacted the following forest measures during the year: A revision of the Public Domain Act, giving towns and cities the right to own and manage municipal forests; provision for a forest commission with the power to spend $10,000 the first year, and $20,000 annually thereafter in the purchase and reforesting of land at a price not to exceed $5 an acre, the land to be exempt from taxation, but cities and towns to be reimbursed by the Commonwealth for losses in taxes thereby; and laws for the disposal of slash and brushwood within the limits of highways and public roads as well as within the neighborhood of woodlands, railroads, and highways. Maryland passed a law for protecting roadside trees to be administered by the State Board of Forestry, and also provided for planting roadside trees with otherwise unexpended funds of the board, and the prevention of promiscuous placing of advertising signs and billboards along public roads. Virginia created the office of State Forester in the State Geological Commission. Provision was made for establishing forest reserves, forest protection, investigation, and assistance to private owners. North Dakota designated the State School of Forestry as a State nursery, with the president of the school as State forester. Pennsylvania passed measures to strengthen the fire protective service of the State. Minnesota provided by constitutional amendment for the establishment of State forests on State lands which are unfitted for agriculture. An active campaign was under way to secure forest legislation during the coming year in a number of States which have hitherto been indifferent to forestry.

TIMBER SURVEY. The Secretary of Commerce and the Secretary of Agriculture have completed plans whereby their two departments will combine in a constructive study of the supply and exploitation of timber in the United States, which has now become one of the big conservation and industrial problems. The study is to be undertaken in the belief that the methods used in exploiting timber resources and the restoration of normal and healthy conditions in the industries which convert timber into usable products, vitally concern the public at large. Extensive surveys already made show that the total amount of standing timber in the United States is close to 2900 billion board feet, of which 2200 billion feet is privately owned, 600 billion feet is in the National Forests, and about 90 billion feet is in some other form of public ownership. The annual cut of saw timber alone is approximately 43 billion feet. Special attention will be given to means of utilizing low grades of lumber and by-products.

FOREIGN COUNTRIES. Forest activities in Europe have been seriously disturbed by the great war. The forest organizations of the continental warring nations are composed for the most part of able-bodied military or semimilitary trained men. It was conservatively estimated that over 40,000 foresters were engaged in the conflict on various battlefields. All forestry gatherings such as the Seventh Congress of the International Union of Experimental Forest Institutes, which was to have been held at Budapest in September, were necessarily postponed. This also applies to the National Forestry Congress which was to have been held at Ottawa in January, 1915. French forests in the war zone were being freely used in defensive operations, since they aided in concealing the positions and numbers of the various armies from the vigilance of the enemy's aviators. Serious damage will accrue to these forests from modern artillery fire and other causes. Great Britain's timber supply from the Baltic provinces was cut off by Germany and the English government was taking steps toward securing timber in Canada.

During the past year the Prussian State forests, with a productive area of 6,700,000 acres, yielded a net income of $20,500,000, or about $3 per acre, the expenditures being about 44 per cent of the gross income. Austrian experiments with wood preservatives have shown that zinc fluorid and sodium fluorid compounds are strongly antiseptic against wood-destroying fungi and much superior to copper sulphate and zinc chlorid. Switzerland passed a law prohibiting clear cutting in protection forests, except under the most unusual circumstances. France purchased the Forest of Eu from the Duke of Orleans. The total of 2,301,258 acres, which is situated in the Districts of Dieppe and Neufchâtel, was purchased for $2,100,000. Experiments in sand binding work in Holland have shown that a mulch of lupine straw has considerable value in promoting both the root and top development of fir trees on drifting sand areas. Similar results with lupine straw, pine litter, etc., have been secured with pine trees on alluvial sand at Eberswalde, Germany. The Royal Botanical Garden and Museum at Berlin has issued a separate publication containing descriptive accounts of a large number of wild forest plants utilized by the Bulus in South Kamerun, Africa.

In Southern Nigeria, on the west coast of Africa, 800 villages now have communal plantations of rubber trees. The natives supply the labor, the native chiefs the land, and the Forestry Department the seeds, technical knowledge, and tapping appliances, the profits being divided equally among the three coöperative parties. A representative of the Japanese government recently toured the National Forests of the United States to learn the government's methods of selling timber and reforestation. One of the principal by-products of the national forests of Japan is furnished by mushrooms, which have yielded in one year a revenue of a million dollars. The Korean government has established nurseries with the idea of educating the people to the importance of tree planting. Several large firms have started reforestation. Planting plans for over 50,000 acres are now under way. In connection with the proposed establishment of forest reserves, the Brazilian government recently completed a survey map of the forest areas of that country. A forest service is being organized by the Argentine government.

FOREST SCHOOLS, PERSONNEL, ETC. The Biltmore Forest School, established in 1898, and therefore the oldest forest school in America, has been discontinued. Dr. C. A. Schenk, its director, returned to his home in Germany, from whence it was later reported that he fell in battle in France. Oberforstmeister Fricke, director of the Forest Academy of Munich, was also killed. The death of Dr. John Nisbet, forestry adviser to the Scottish Board of Agriculture, was announced late in the year.

The forestry building at Cornell University was opened on May 15. Ralph S. Hosmer resigned as superintendent of forestry in the Hawaiian Islands to take the position of professor of forestry at Cornell in place of Walter Mulford, who assumes the new professorship of forestry at the University of California. Major George P. Ahern resigned as director of the Philippine Forestry Bureau, after fifteen years of service.

Prof. James B. Berry, formerly of Pennsylvania State College, is in charge of the newly established Forest School of the Georgia State College of Agriculture. A new forestry department was opened at the University of Montana, with Dr. Dorr Skeels as dean.

The King of England has given permission to have part of the royal estate placed at the disposal of the school of forestry at Cambridge University for the purposes of experiment and demonstration.

Bibliography. Amerigo Hofmann, *Aus den Waldungen des fernen Ostens* (Vienna, 1913); *Report of the Forestry Committee of the Fifth National Conservation Congress at Washington, D. C.* (Washington, 1913); W. J. Bean, *Trees and Shrubs Hardy in the British Isles* (2 vols., London, 1914); Cheyney and Wentling, *The Farm Wood Lot* (New York, 1914); André Jacquot, *Sylviculture* (Paris, 1913); F. W. Neger, *Die Laubhölzer* (Berlin, 1914); Gifford Pinchot, *Training of a Forester* (Philadelphia, 1914); Alfred Rehder, *Bradley Bibliography*, vol. iv, in *Arnold Arboretum Publication, No. 3* (Cambridge, Mass., 1914); J. E. Rogers, *Tree Guide: Trees East of the Rockies* (Garden City, N. Y., 1914); G. R. Shaw, *Genus Pinus*, in *Arnold Arboretum Publication, No. 5* (Cambridge, Mass., 1914); Herbert Stone, *Timbers of Commerce and Their Identification* (London, 1914); Stone and Freeman, *Timbers of British Guiana* (*ib.*, 1914).

FORESTRY ASSOCIATION OF AMERICA. See FORESTRY.

FORMOSA, or TAIWAN. An island dependency of Japan, off the coast of the Chinese province of Fukien. Capital, Dai-Hoku, or Taipei. The area of the island of Formosa is 2318.5 square ri; the seven adjacent isles, 5.6 square ri; total, 2324.1 square ri, or 13,841 square miles. Estimates of the population vary; one for 1913 places the legal population at 3,512,607. The present population as officially estimated for the end of 1911 was 3,410,838, of whom 1,794,052 males and 1,616,786 females; civilized aboriginals numbered 1,652,687 males and 1,510,100 females; uncivilized aboriginals, 61,680 and 60,279; Japanese, 65,158 and 44,628; foreigners, 14,527 and 1779. Estimated population of the larger towns Dec. 31, 1911: Dai-Hoku (consisting of Jonai, Moko, and Daitote), 95,077; Dainan (or Tainan), 59,601; Kagi (or Chia-i), 22,418; Rokko (or Lukong), 19,153; Kiilung (or Keelung), 17,962; Shinchiku (or Hsinchu), 16,294; Gilan (or Ilan), 16,062; Shokwa (or Changhua), 15,545; Taku (or Takow), 13,775; Daichiu (or Taichu), 12,788; Toko (or Tonkong), 12,230.

Formosa was ceded by China to Japan in 1895, and Japanese civil government was instituted in the following year; since then many improvements have been made, including the establishment of an educational system. The 1905 census showed that 97.62 per cent of the population were illiterate. According to a recent report, there were 169 elementary schools, with 892 teachers and 39,012 pupils.

The agricultural products include rice, tea, sugar, sweet potatoes, jute, and ramie. The forests yield large quantities of camphor, worked as a government monopoly. Mining in Formosa shows development; the mineral products include gold, silver, copper, sulphur, coal, and petroleum. The fisheries are of considerable importance. Manufactures include flour, sugar, spirits, tobacco, oil, soap, etc. Exclusive of the large trade with Japan, imports and exports of merchandise have been as follows, in thousands of yen:

	1902	*1907*	*1910*	*1911*	*1912*
Imports ...	10,101	11,221	19,858	19,555	19,807
Exports	13,724	9,741	11,987	13,176	14,960

Leading imports in 1911 and 1912 respectively (exclusive of imports from Japan): opium, 1880 and 3094; oil cake, 909 and 1917; rice, 416 and 1150; sugar machinery, 4238 and 1044; leaf tobacco, 829 and 891; kerosene, 660 and 756; paper and manufactures, 599 and 613. There is a large importation of cotton and silk fabrics. Principal exports in 1911 and 1912 respectively, in thousands of yen (exclusive of exports to Japan): refined camphor, 3463 and 4410; Oolong tea, 5228 and 4058; Pouchong tea, 1811 and 2564; sugar, 956 and 1719; flax and hemp, 389 and 379. Imports from and exports to China in 1912, 6767 and 4264 thousand yen; United Kingdom, 3490 and 1087; British India, 2173 and 342; United States, 1700 and 4917; Germany, 1072 and 1573. State railways in 1912, 296 miles; private railways (including light railways on sugar estates), 671 miles.

The budget for 1913–14 balanced at 44,055,366 yen. Formosa is administered by a governor-general, resident at Dai-Hoku (in 1914, Lieut. Gen. Count Sakuma Samata).

FORWARD-TO-THE-LAND LEAGUE. See AGRICULTURE.

FOURTH OF JULY ACCIDENTS. See TETANUS.

FOWLER, EDWARD PAYSON. An American physician and writer on medical subjects, died Jan. 29, 1914. He was born in 1834 at Cohocton, N. Y., and in 1855 graduated from the New York Medical College. He became one of the most prominent physicians in the State and served as visiting physician to many hospitals. He was the author of: *Etiology and General History of Scarlet Fever; Certain Maladies of the Heart;* and *Abnormalities of the Cerebral Convolutions.* He was also a member of several medical societies.

FRANCE. A republic in western Europe. Capital, Paris.

AREA AND POPULATION. In the following table are embodied the returns by departments of the census of March 5, 1911; the area is given in square kilometers. The legal population is compared with that for 1906 and the density per square kilometer is given for 1911. The total area is equivalent to 53,646,374 hectares, or to 207,129 square miles. The area as calculated in 1901 excludes the foreshore, the estuaries, and certain barren regions, and is reckoned at 52,945,198 hectares, with a population of 38,961,945.

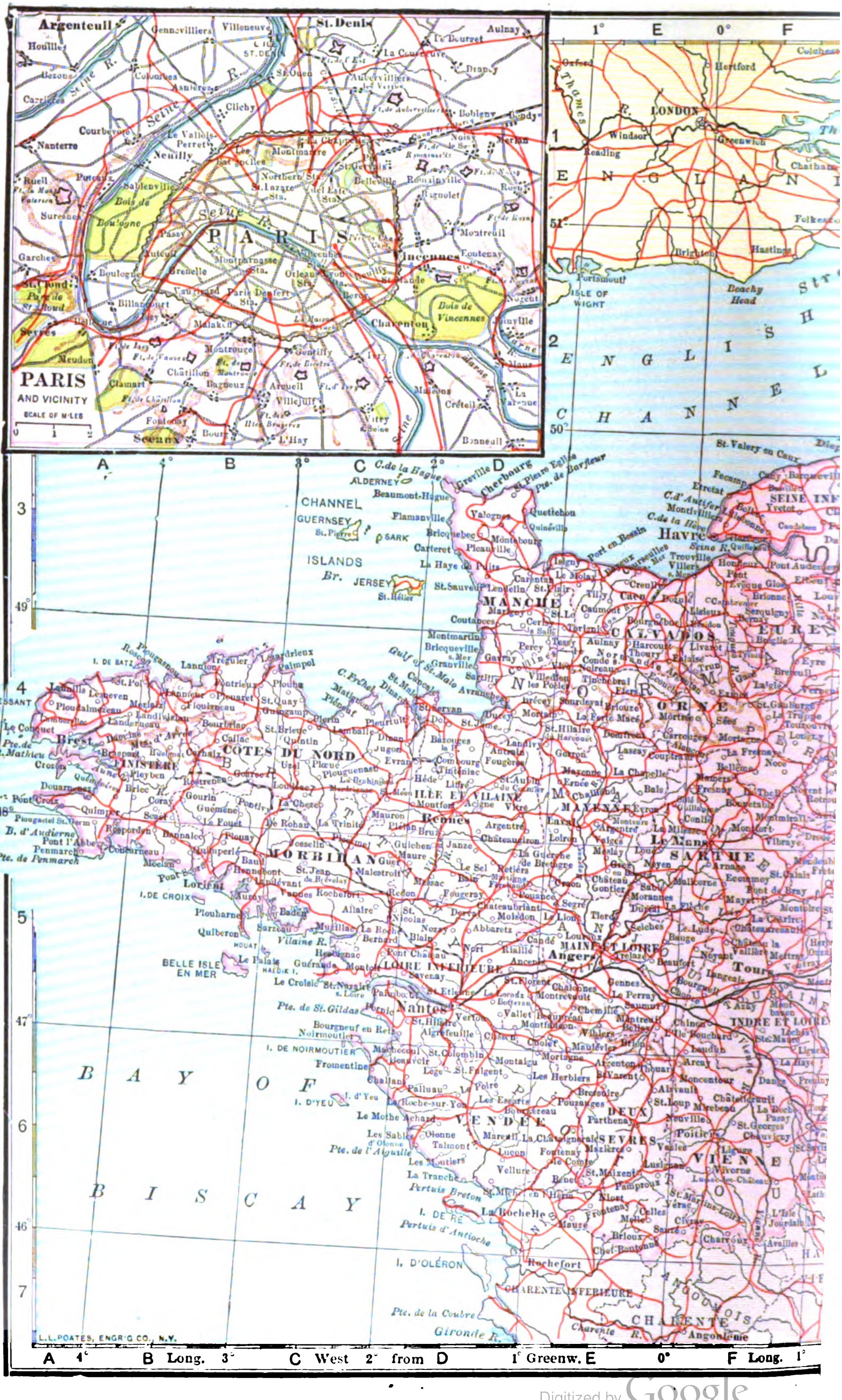
	Sq. km.	*1911*	*1906*	*D.*
Ain	5,825.60	342,482	345,856	58.8
Aisne	7,428.35	530,226	534,495	71.4
Allier	7,381.83	406,291	417,961	50.0
Alpes (Basse-) .	6,988.40	107,231	113,126	15.3
Alpes (Hautes-)	5,643.11	105,083	107,498	18.6
Alpes-Maritimes	3,736.26	356,338	334,007	95.4
Ardèche ...	5,556.07	331,801	347,140	59.7
Ardennes ..	5,252.59	318,896	317,506	60.7
Ariège	4,903.88	198,725	205,684	40.5
Aube	6,026.29	240,755	243,670	39.9
Aude	6,342.27	300,537	308,327	47.4
Aveyron ...	8,771.13	369,448	377,299	42.1
Bouches-du-Rhône ...	5,247.95	805,532	765,918	153.5
Calvados ...	5,692.61	396,318	403,431	69.6
Cantal	5,779.33	223,361	228,690	38.6
Charente ...	5,971.75	346,424	351,733	58.0
Charente-Inférieure ..	7,231.51	450,871	453,793	62.3
Cher	7,303.53	337,810	343,484	46.3
Corrèze	5,887.65	309,646	317,430	52.6
Corse	8,721.82	288,820	291,160	33.1
Côte-d'Or ..	8,786.77	350,044	357,950	39.8
Côtes-du-Nord	7,217.64	605,523	611,506	83.9
Creuse	5,606.13	266,188	274,094	47.5
Dordogne ..	9,224.20	437,432	447,052	47.4
Doubs	5,260.03	299,935	298,438	56.9
Drôme	6,561.36	290,894	297,270	44.3
Eure	6,037.48	323,651	330,140	53.6
Eure-et-Loir	5,939.80	272,255	273,823	45.8
Finistère ...	7,029.47	809,771	795,103	115.2
Gard	5,880.65	413,458	421,166	70.3
Garonne (Haute-) .	6,366.99	432,126	442,065	67.9
Gers	6,290.58	221,994	231,188	35.3
Gironde ...	10,725.60	829,095	823,925	77.3
Hérault	6,224.27	480,484	482,779	77.2
Ille-et-Vilaine ..	6,992.84	608,098	611,805	86.9
Indre	6,906.44	287,673	290,216	41.1
Indre-et-Loir	6,158.47	341,205	337,916	55.4
Isère	8,236.58	555,911	562,315	67.5
Jura	5,055.25	252,713	257,725	50.0
Landes	9,364.04	288,902	293,397	30.8
Loir-et-Cher .	6,421.86	271,231	276,019	42.2
Loire	4,799.31	640,549	643,943	133.5
Loire (Haute-) .	5,001.39	303,838	314,770	60.7
Loire-Inférieure ..	6,979.97	669,920	666,748	95.7
Loiret	6,811.88	364,061	364,999	53.4
Lot	5,226.13	205,769	216,611	39.4
Lot-et-Garonne .	5,384.76	268,083	274,610	49.8
Lozère	5,179.82	122,738	128,016	23.7
Maine-et-Loire	7,218.08	508,149	513,490	70.4
Manche	6,411.68	476,119	487,443	74.3
Marne	8,205.31	436,310	434,157	53.2
Marne (Haute-) .	6,256.95	214,765	221,724	34.3
Mayenne ...	5,212.28	297,732	305,457	57.1
Meurthe-et-Moselle ..	5,279.56	564,730	517,508	107.0
Meuse	6,240.57	277,955	280,220	44.5
Morbihan ..	7,092.49	578,400	573,152	81.5
Nièvre	6,888.14	299,312	313,972	43.4
Nord	5,773.78	1,961,780	1,895,861	339.7
Oise	5,886.78	411,028	410,149	69.8
Orne	6,144.10	307,433	315,993	50.0
Pas-de-Calais	6,751.56	1,068,155	1,012,466	158.2
Puy-de-Dôme	8,016.18	525,916	535,419	65.6
Pyrénées (Basses-) ..	7,712.38	433,318	425,817	56.2
Pyrénées (Hautes-)	4,534.49	206,105	209,397	45.5
Pyrénées-Orientales	4,143.50	212,986	213,171	51.4
Belfort (Territoire de)	6,084.9	101,386	95,421	166.6
Rhône	2,859.34	915,581	858,907	322.0
Saône (Haute-)..	5,375.24	257,606	263,890	47.9
Saône-et-Loire	8,627.41	604,446	613,377	70.1
Sarthe	6,244.79	419,370	421,470	67.1
Savoie	6,187.91	247,890	253,297	40.0
Savoie (Haute-)	4,598.01	255,137	260,617	55.5
Seine	4,795.0	4,154,042	3,848,618	8664.5
Seine-Inférieure ..	6,341.99	877,383	863,879	138.4
Seine-et-Marne ...	5,931.07	363,561	361,939	61.3
Seine-et-Oise ..	5,658.94	817,617	749,753	144.5
Sèvres (Deux-) .	6,054.34	337,627	339,466	55.8
Somme	6,277.12	520,161	532,567	82.9
Tarn	5,780.44	324,090	330,533	56.1
Tarn-et-Garonne .	3,730.56	182,537	188,553	48.9
Var	6,023.39	330,755	324,638	54.9
Vaucluse ..	3,578.46	238,656	239,178	66.7
Vendée	7,015.58	438,520	442,777	62.5
Vienne	7,044.14	332,276	333,621	47.2
Vienne (Haute-) .	5,555.28	384,736	385,732	69.2
Vosges	5,908.08	433,914	429,812	73.5
Yonne	7,460.64	303,889	315,199	40.7
Totals ...	53,646,374	39,601,509	39,252,245	73.8

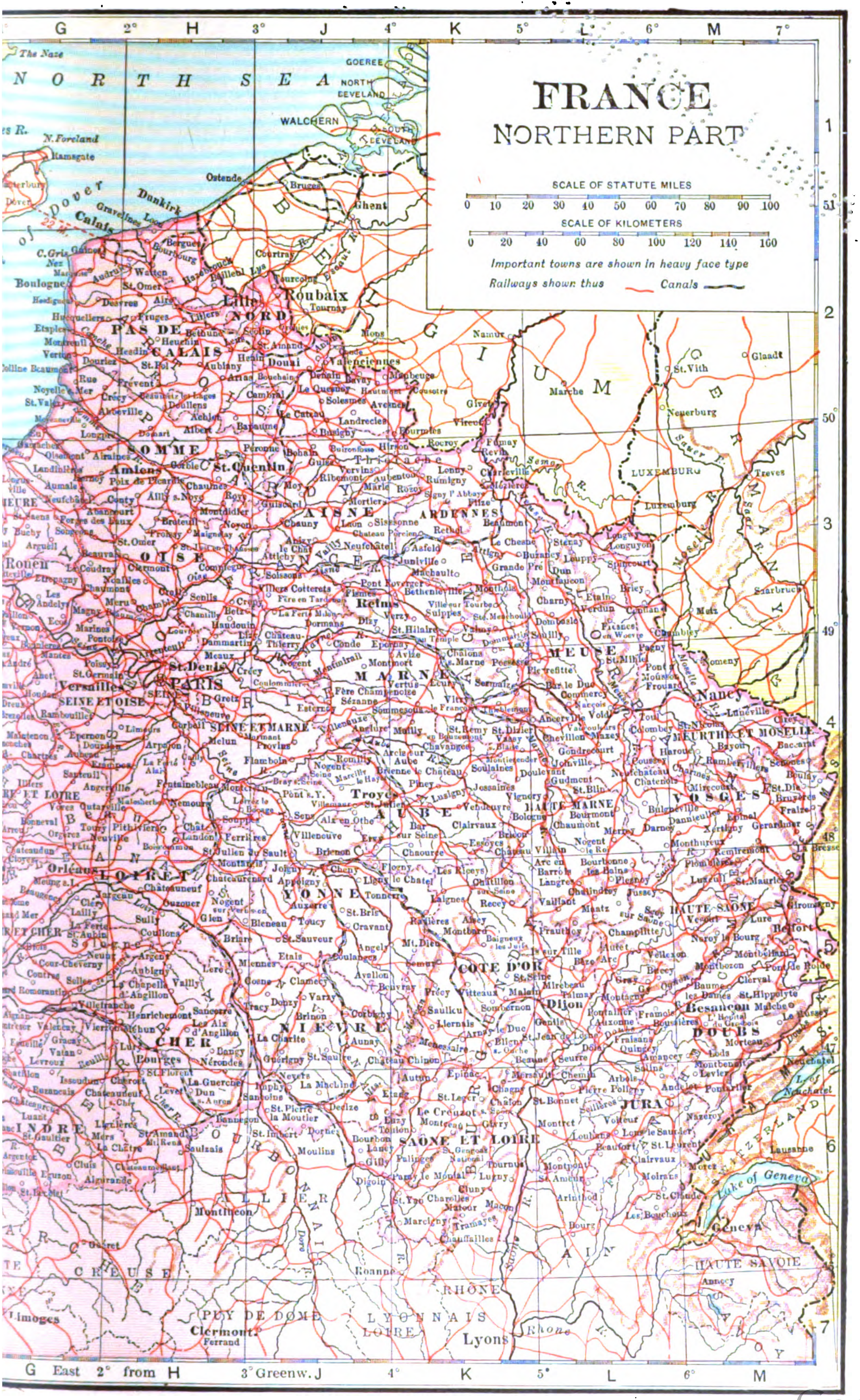
The number of marriages in 1912 was 311,929, against 307,788 in 1911; divorces, 14,579, against 13,058; living births, 750,651, against 742,114; stillbirths, 34,312, against 33,840; deaths, 692,740, against 776,983.

Some of the principal cities, with their communal population in 1911, are as follows: Paris, 2,888,110 (1,053,262 in 1851); Marseilles, 550,619; Lyons, 523,796; Bordeaux, 261,678; Lille, 217,807; Nantes, 170,535; Toulouse, 149,576; Saint-Etienne, 148,656; Nice, 142,940; Le Havre, 136,159; Rouen, 124,987; Roubaix, 122,723; Nancy, 119,949; Reims, 115,178; Toulon, 104,582; Amiens, 93,207; Limoges, 92,181; Brest, 90,540; Angers, 83,786; Tourcoing, 82,644; Nîmes, 80,437; Montpellier, 80,230; Rennes, 79,372; Grenoble, 77,438; Dijon, 76,874; Tours, 73,398; Calais, 73,322; Orléans, 72,096; Saint-Denis, 71,759; Le Mans, 69,361; Levallois-Perret, 68,703; Clermont-Ferrand, 65,386; Versailles, 60,458; Besançon, 57,978; Boulogne-sur-Seine, 57,027; Saint-Quentin, 55,571; Troyes, 55,486; Boulogne, 52,128; Béziers, 51,042; Avignon, 49,304; Lorient, 49,039; Caen, 46,934; Clichy, 46,676; Bourges, 45,735; Neuilly-sur-Seine, 44,616; Cherbourg, 43,731; Montreuil, 43,217; Asnières, 42,583; Villeurbanne, 42,525; Saint-Ouen, 41,904; Poitiers, 41,242; Perpignan, 39,510; Belfort, 39,371; Dunkerque, 38,891; Vincennes, 38,568; Ivry, 38,307; Saint-Nazaire, 38,267; Angoulême, 38,211; Courbevoie, 38,138; Aubervilliers, 37,558; Pau, 37,149.

EDUCATION. Education, public and private, is under the control of the ministry of public instruction, and is highly developed. Primary instruction is free and compulsory. By the law of 1904 all clerical schools were to be suppressed by 1914. There were still in 1911 under clerical teachers 17,175 infant-school and 75,292 primary-school pupils.

The conscription list, class of 1910, carried 301,467 men. Degree of instruction of 18,093 of these, unknown. Of the other 283,374, 2.79 per cent could neither read nor write, 1.31 per


PARIS
AND VICINITY
SCALE OF MILES
0
1
2
Argenteuil
St. Denis
Aulnay
Gennevilliers
Villeneuve
Houilles
Bezons
Colombes
Asnières
St. Ouen
Aubervilliers
Le Bourget
La Courneuve
Drancy
Carrières
Seine R.
Clichy
Bobigny
Bondy
Courbevoie
Nanterre
Le Vallois-Perret
Neuilly
Les Batignolles
Montmartre
La Chapelle
Noisy le Sec
Pantin
Rueil
Puteaux
Sablonville
Northern Sta.
St. Lazare Sta.
Belleville
Romainville
Bagnolet
Suresnes
Bois de Boulogne
PARIS
Montreuil
Passy
Auteuil
Grenelle
Montparnasse Sta.
Vincennes
Fontenay
Garches
Boulogne
Vaugirard
Orleans Sta.
Paris Denfert Sta.
Bercy
St. Mandé
Nogent
St. Cloud
Parc de St. Cloud
Billancourt
Bois de Vincennes
Charenton
Joinville
Sèvres
Bellevue
Meudon
Malakoff
Montrouge
Gentilly
Ivry
Marne R.
Clamart
Châtillon
Bagneux
Arcueil
Villejuif
Maisons
Créteil
Fontenay
Sceaux
Bourg
L'Hay
Vitry s. Seine
Bonneuil
1°
E
0°
F
Oxford
Thames
Hertford
LONDON
Windsor
Reading
Greenwich
Chatham
E N G L A N D
51°
Folkestone
Brighton
Hastings
Portsmouth
ISLE OF WIGHT
Beachy Head
E N G L I S H
C H A N N E L
50°
St. Valery en Caux
Dieppe
Fécamp
Etretat
C. d' Antifer
Yvetot
SEINE INF.
Havre
Honfleur
Pont Audemer
Trouville
A
4°
B
3°
C
2°
D
C. de la Hague
ALDERNEY
Cherbourg
Pte. de Barfleur
Beaumont-Hague
Valognes
CHANNEL
GUERNSEY
St. Pierre
SARK
Flamanville
ISLANDS
Br.
JERSEY
St. Helier
Carteret
La Haye du Puits
Isigny
Port en Bessin
Carentan
St. Lô
Bayeux
Caen
MANCHE
CALVADOS
Lisieux
Bernay
EURE
49°
Coutances
Granville
Avranches
Vire
Falaise
Argentan
Evreux
Gulf of St. Malo
Lannion
Tréguier
Paimpol
Roscoff
Morlaix
St. Pol
I. DE BATZ
I. D'OUESSANT
Brest
Landerneau
Le Conquet
Pte. de St. Mathieu
Crozon
FINISTÈRE
Guingamp
St. Brieuc
COTES DU NORD
Lamballe
Dinan
St. Malo
Dol
Fougères
Mortain
Domfront
ORNE
Alençon
Sées
Mortagne
Douarnenez
Pont Croix
Quimper
Châteaulin
Carhaix
Loudéac
ILLE ET VILAINE
Rennes
Vitré
Laval
MAYENNE
Mayenne
Le Mans
SARTHE
48°
B. d'Audierne
Pte. de Penmarch
Concarneau
Quimperlé
Pontivy
Ploërmel
MORBIHAN
Lorient
I. DE CROIX
Vannes
Château Gontier
La Flèche
Quiberon
BELLE ISLE EN MER
Redon
Châteaubriant
Segré
Angers
MAINE ET LOIRE
Saumur
Tours
INDRE ET LOIRE
Le Croisic
St. Nazaire
Guérande
Paimboeuf
Ancenis
LOIRE INFÉRIEURE
Nantes
Pte. de St. Gildas
Pornic
Bourgneuf en Retz
I. DE NOIRMOUTIER
Cholet
Chinon
Loudun
47°
B A Y O F
B I S C A Y
I. D'YEU
La Roche-sur-Yon
VENDÉE
Les Sables d'Olonne
Pte. de l'Aiguille
Fontenay
DEUX SÈVRES
Parthenay
Niort
Poitiers
VIENNE
Châtellerault
Pertuis Breton
La Rochelle
I. DE RÉ
Pertuis d'Antioche
I. D'OLÉRON
Rochefort
46°
CHARENTE INFÉRIEURE
CHARENTE
Angoulême
Pte. de la Coubre
Gironde R.
Charente R.
ANGOUMOIS
3
4
5
6
7
1
2
L.L.POATES, ENGR'G CO., N.Y.
A 4° B Long. 3° C West 2° from D 1° Greenw. E 0° F Long. 1°



FRANCE
NORTHERN PART
SCALE OF STATUTE MILES
0 10 20 30 40 50 60 70 80 90 100
SCALE OF KILOMETERS
0 20 40 60 80 100 120 140 160
Important towns are shown in heavy face type
Railways shown thus
Canals
G 2° H 3° J 4° K 5° L 6° M 7°
1 51° 2 50° 3 49° 4 48 5 47 6 7
G East 2° from H 3° Greenw. J 4° K 5° L 6° M
NORTH SEA
The Naze
N. Foreland
Ramsgate
Dover
Str. of Dover
Calais
Dunkirk
Ostende
Bruges
Ghent
GOEREE
NORTH BEVELAND
WALCHERN
SOUTH BEVELAND
Courtrai
Roubaix
Lille
Tournay
Boulogne
St. Omer
PAS DE CALAIS
NORD
Douai
Valenciennes
Mons
Namur
Maubeuge
Cambrai
Arras
Abbeville
SOMME
Amiens
St. Quentin
BELGIUM
Marche
St. Vith
Gladt
GERMANY
Neuerburg
LUXEMBURG
Luxemburg
Treves
Saarbruck
Metz
Mezieres
Charleville
AISNE
ARDENNES
Laon
Rethel
Sedan
OISE
Beauvais
Compiegne
Soissons
Rouen
Reims
Verdun
MEUSE
St. Mihiel
Nancy
MEURTHE ET MOSELLE
Luneville
VOSGES
Epinal
St. Die
St. Denis
PARIS
Versailles
SEINE ET OISE
SEINE ET MARNE
Meaux
Melun
Fontainebleau
MARNE
Chalons s. Marne
Epernay
Chateau Thierry
Troyes
AUBE
HAUTE MARNE
Chaumont
Langres
Bar le Duc
EURE ET LOIRE
Chartres
LOIRET
Orleans
YONNE
Auxerre
Sens
COTE D'OR
Dijon
Beaune
HAUTE SAONE
Vesoul
Belfort
Besancon
DOUBS
JURA
Lons le Saunier
LOIR ET CHER
Blois
CHER
Bourges
NIEVRE
Nevers
SAONE ET LOIRE
Macon
Chalon
Le Creuzot
Autun
Moulins
BOURBONNAIS
ALLIER
Montlucon
INDRE
CREUSE
Limoges
PUY DE DOME
Clermont Ferrand
LYONNAIS
LOIRE
RHONE
Lyons
Roanne
AIN
SWITZERLAND
L. of Neuchatel
Lake of Geneva
Geneva
Lausanne
HAUTE SAVOIE
Annecy
SAVOY
Rhone R.

cent could read only, 27.44 per cent could read and write; 65.98 per cent had acquired a more extensive primary education, and 2.30 per cent were graduates of secondary institutions. The class of 1911 carried 314,369 conscripts, of whom 2.87 per cent could neither read nor write, 1.39 per cent could read only, 28.45 per cent could read and write; 62.38 per cent had acquired a more extensive primary education, and 2.30 per cent were graduates of secondary institutions; degree of instruction unknown in the case of 23,304.

Infant schools (1911–12) numbered 3873 (2639 public); instructors, 8362 (6706); pupils, 595,479 (254,311 boys and 240,394 girls in public schools). Primary schools, 81,237 (68,007 public); instructors, 154,700 (56,076 male and 61,962 female instructors in public schools); pupils, 5,526,404 (2,396,764 boys and 2,081,710 girls in public schools). Total state expenditure for primary instruction for the year 1911, 222,259,915 francs. There were in November, 1912, 62,092 boys in the lycées, and 36,796 in the communal colleges; and 19,898 girls in lycées, and 11,882 in communal colleges. Students in universities, Jan. 15, 1913, 41,109 (4056 women). Degrees are conferred by state universities alone.

Since the separation of church and state by the law of Dec. 9, 1905, the state, the departments, and the communes have been relieved of all financial obligations toward the churches, though pensions and allowances have been granted to avoid working hardship during the transition period. The arrangements made by the government to acquire administrative control over buildings used for public worship were not agreed to by the clergy, nor did the clergy acquiesce in the law of Dec. 9, 1905. All creeds are permitted public worship.

AGRICULTURE. The distribution of agricultural and other lands was calculated in 1911, as follows: 23,752,240 hectares under great crops and sown meadows, 4,905,670 under natural meadows, 1,526,560 under forage grasses, 3,664,380 under pastures, 1,664,880 under vines productive and nonproductive, 3,885,220 uncultivated land, 1,083,990 in rosaries, shrubberies, market gardens, etc.; 9,339,319 under wood and forest, and 2,861,069 hectares put to various uses not included in any of the foregoing.

In the table below are shown comparative values for two years of some main crops, in francs; with the production in quintals in 1912:

	Qs. 1912	*Fr. 1912*	*Fr. 1911*
Wheat ...	90,991,500	2,258,289,000	2,252,003,900
Meslin ...	1,554,620	87,100,600	80,344,450
Rye	12,882,200	280,009,900	229,419,300
Barley ...	11,014,200	216,498,800	212,447,650
Buckwheat	5,006,940	112,858,700	44,924,400
Oats	51,541,600	1,091,969,900	1,042,468,400
Corn	6,028,680	141,748,900	89,022,050
Millet	154,555	....	....
Potatoes ..	150,251,580	1,089,155,180	1,180,647,420
Sugar beets	72,221,045	217,453,260	135,998,980
Other beets	23,165,860	54,715,570	88,196,280
Tobacco ..	226,272	24,817,500	19,476,070
Cider Fruits .	23,948,260	156,599,620	198,269,540
Vines	59,384,171	1,785,424,931	1,338,141,144

Including roots and grasses, annual and perenial, the area under all forage plants in 1911 was 15,271,830 hectares, yielding 709,963,000 quintals, valued at 3,517,472,000 francs; under truck gardens, 291,420 hectares, yielding produce valued at 567,222,000 francs. Hay from natural meadows was valued at 1,268,423,640 francs; lucerne, 400,353,390; clover, 305,466,200; annuals planted for forage, 256,839,370; mixed grasses, 341,863,350.

In the table below are shown areas planted to main crops in 1913 and 1914, with production in quintals for 1913, as compared with 1912. Statistics for 1914 production are not available, on account of the European War.

	Hectares		*Quintals*	
	1913	*1914*	*1913*	*1912*
Wheat ...	6,542,230	6,498,330	86,919,050	91,182,600
Rye	1,175,710	1,178,610	12,714,750	13,039,000
Barley ...	760,205	732,000	10,487,600	11,881,340
Oats	3,979,270	3,979,420	51,826,010	54,519,700
Corn	410,700	461,920	....	....
Vines* ...	1,673,409	1,660,447	41,058,882	59,339,035
Tobacco ..	4,416	8,348	160,220	....
Beets† ...	231,440	242,337	9,191,806	7,519,508
Flax	28,015	24,703	76,260	....
Potatoes .	1,489,470	1,555,730	1,517,020	....

*Production in hectoliters. †Sugar beets.

LIVE STOCK. In the table below are shown live stock statistics for comparative years ending December 31:

	1911	*1912*	*1913*
Horses	3,286,110	3,222,140	3,230,700
Mules	194,040	196,410	192,570
Asses	360,590	358,660	360,390
Cattle	14,552,480	14,705,900	14,807,380
Sheep	16,425,330	16,467,700	16,213,080
Swine	6,719,570	6,903,750	7,047,750
Goats	1,424,180	1,408,520	1,458,230

Of the horses enumerated Dec. 31, 1913, 2,558,170 were over and 672,530 were under three years; of the cattle, 7,807,560 were cows, 1,845,620 oxen, 284,490 bulls, 2,855,780 young stock, and 2,013,930 calves. Of the sheep, 9,334,840 were ewes over one year, 2,589,000 sheep over one year, 295,410 rams, 3,993,780 lambs; pigs under six months numbered 3,294,010, fat stock over six months 2,808,230, sows 960,000, boars 38,550.

In 1912, 33,133 hectograms of silk-worm eggs were placed to be hatched; cocoons obtained, 6,233,942 kilograms; average yield of cocoons per hectogram of eggs, 188.1 kilogram.

FISHERIES. There were, in 1905, 95,804 persons engaged in the various fisheries, with 27,645 sailing boats of 186,030 tons, and 201 steamers of 13,874 tons. The total value of the products was 122,891,036 francs, of which the cod fisheries contributed 18,880,855 francs, the herring fisheries 13,829,036, and the sardine fisheries 10,054,367. In 1909 there were 159,899 fishermen; total value of output, 134,865,728 francs. In 1910 there were 128,869 fishermen, with 28,288 sail boats of 206,129 aggregate tons and 454 steamers of 38,000 tons; value of sail boats, 51,933,057 francs; of steamers, 23,945,330; value of the engines, 25,309,360. Total value of all fisheries products for the year 1910, 140,288,211 francs.

MINING AND METALS. In 1911 there were 1471 conceded mines, covering an area of 1,179,466 hectares, of which 548, covering an area of 591,975 hectares, were in operation. In these mines 231,924 persons were employed—164,607 underground, 67,317 at the surface. Total estimated number of work days, 65,813,289; total estimated wages, 339,137,234 francs. Total output, 57,971,922 tons, valued at 717,593,105 francs at the pit's mouth. The quarries employed 128,582 work people; output, 52,683,238 tons, valued at 278,564,187 francs. In the table below are shown some of the principal mining products, with their value in francs, for comparative years:

	Tons		*Francs*	
	1910	*1911*	*1910*	*1911*
Coal	37,634,893	38,520,827	569,034,521	589,219,277
Lignite	715,049	708,764	7,222,471	7,229,739
Iron ore	14,605,542	16,639,426	67,511,179	77,462,085
Peat	48,415	58,521	584,539	785,674
Salt	1,051,427	1,389,303	15,320,618	18,826,599
Gold ore	126,398	143,514	7,080,568	7,583,080
Zinc ore	50,624	43,761	5,078,066	5,159,005
Iron pyrites	250,432	277,942	4,269,498	4,696,685
Argent. lead	14,536	14,098	2,878,503	2,612,959
Antimony	28,130	29,267	1,798,117	1,596,668
Asphalt	38,512	35,568	638,494	566,688
Manganese	7,925	6,036	214,128	169,564

There were in operation, in 1911, 202 metal works, employing 101,538 work people and consuming 3,694,298 tons of coal, 5,080,482 tons of coke, 6974 tons of charcoal. The smelting works numbered 46, with 18,672 workers; output, 4,470,100 tons, valued at 339,136,000 francs. Puddling works, 99, with 15,191 work people; output, 517,800 tons, valued at 95,398,000 francs. Steel works, 96, with 67,675 workers; output 2,702,000 tons, valued at 556,689,000 francs. Other works, 36, with 5868 workers; output 109,651 tons, valued at 99,759,000 francs.

OTHER INDUSTRIES. The silk works in operation in 1910 numbered 193, with an output of 629,023,462 kilograms of spun silk. Sugar works in operation in 1911–12, 220, treating 4,077,843,268 kilograms of beets, and producing 465,377,621 kilograms of refined sugar. There were in operation in 1912 17,107 distilleries, with a total production of 3,106,609 hectoliters pure alcohol, and 681,185 hectoliters denatured alcohol.

COMMERCE. The imports and exports in special trade for two comparative years are shown below in thousands of francs (A—foodstuffs, B—raw materials, C—manufactured articles).

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
A.	1,803,400	1,916,500	849,800	833,200
B	4,813,200	4,941,600	1,944,900	1,882,700
C	1,614,200	1,650,300	3,917,900	4,159,500
Total	8,230,800	8,508,400	6,712,600	6,875,400

The figures for the 1913 special trade are subject to slight revision. The general commerce for 1912 shows imports valued at 10,293,600,000 francs, and exports valued at 8,823,900,000 francs.

The following table shows imports and exports (special trade) by great classes for comparative years, 1913 provisional (values in thousands of francs):

A glance at some articles of special commerce valued at over 100,000,000 francs will show their growth or diminution during six years (values in millions of francs):

Imports	*1905*	*1906*	*1909*	*1910*	*1912*	*1913*
Wool	446.1	588.1	684.4	658.9	684.6	698.8
Cotton	311.4	358.9	494.7	469.8	567.1	541.2
Coal, etc.	217.8	361.2	442.1	400.7	501.4	575.2
Raw silk	267.2	345.2	381.5	346.3	567.1	541.2
Rubber	98.3	120.3	208.8	320.1	218.7	199.5
Cereals	151.7	221.3	152.9	301.3	366.8	613.4
Wines	108.8	102.5	123.8	296.5	321.0	275.6
Machinery	130.1	148.4	216.2	247.5	301.6	323.7
Skins, etc.	179.7	199.6	199.3	206.9	222.3	233.5
Timber	166.9	172.6	183.2	165.9	177.2	186.9
Copper	108.1	164.7	122.6	130.6	197.1	207.0
Coffee	94.6	101.8	112.3	126.4	216.9	224.8
Flax	80.4	87.4	81.2	82.4	114.7	122.9
Oil seeds	192.6	231.2	292.1	379.7	17.0	10.5
Petroleum	....	....	....	....	144.9	144.9
Chem. Prods.	150.8	188.6	....	....	....	....
Exports	*1905*	*1906*	*1909*	*1910*	*1912*	*1913*
Raw wool	250.2	278.0	337.7	341.4	362.5	294.2
Silk	275.0	307.8	316.9	332.8	292.3	374.7
Cottons	245.5	306.7	332.0	328.2	384.7	367.4
Wines	247.6	196.9	214.4	243.3	228.8	200.3
Woolens	193.4	224.0	212.1	212.5	190.7	211.3
Raw silk	148.8	172.3	164.0	183.6	147.7	161.7
A. de P.*	175.2	184.0	178.3	172.7	184.6	190.8
Automobiles	100.5	137.9	146.6	161.9	207.1	217.5
Skins	140.3	153.1	141.5	183.7	321.2	315.7
Metals	111.1	114.8	99.1	102.4	118.8	125.0

* Articles de Paris.

Some of the principal countries of origin and destination in the special trade are given in the table below, with values in thousands of francs:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
U. K.	1,049,300	1,134,100	1,364,800	1,446,600
Germany	999,200	1,074,300	821,700	869,500
U. S	890,300	870,700	431,400	420,800
Belgium	540,800	570,200	1,143,800	1,119,200
Russia	432,200	461,900	62,200	85,400
Argent.	333,500	396,000	188,700	199,000
Spain	230,100	286,400	140,100	151,300
Italy	209,400	238,100	302,300	306,300
Brazil	198,000	196,000	88,800	85,600
Switzerland	150,800	188,400	406,500	394,800
Turkey	101,100	89,200	87,000	82,300
Aus.-Hun.	106,500	102,000	48,300	3,700
Brit. Ind.	355,900	......	33,700	....
China	217,800	......	14,600	....

COMMUNICATIONS. At the end of 1910 there were in operation 40,484 kilometers of main railway lines, 234 of industrial lines, and 8956 of local lines; making a total of 49,628 kilometers, besides 8687 kilometers of tramways. The main lines had a personnel of 339,032, and rolling stock including 12,840 locomotives and 379,181 cars. The local lines had (1909) a personnel of 12,864,933 locomotives, and 13,603 cars. Receipts from main lines (1910) 1,829,942,000 francs; expenditure, 1,098,802,000; net profit, 731,140,000; net kilometric profits, 18,060. Length of main lines in operation in 1911 40,692 kilometers; in 1912, 40,927. Length of local lines in operation in 1911, 9327; in 1912, 10,261.

Previous to the war a second railway line

	Imports			*Exports*		
	1911	*1912*	*1913*	*1911*	*1912*	*1913*
Cereals	715,100	366,800	613,400	9,800	14,300	11,300
Wines	301,500	321,000	275,600	187,700	228,800	200,300
Textiles	1,694,900	1,779,700	1,785,900	635,200	658,400	580,700
Yarns *	223,600	231,200	219,800	1,004,800	1,095,400	1,189,700

* Silk and cotton threads, etc.; and woolen yarns.

from Le Havre to Paris, supplementing the double track line on the Western Railway state system was proposed, at the insistence of the business interests of Havre. The Western Railway maintained a double line which carried the heavy freight as well as the passengers between the port and the capital. The cost of the new line was estimated at $16,405,000, and the time of construction about 10 years.

A notable achievement in French railway operation was the transporting of the entire British force from the region of the river Aisne to the field of action in Northwest France and Western Belgium. This operation began on October 3 from Compiègne, and the troops were detrained at St. Omer, 97 miles due north of Compiègne, and there was a total railway journey of about 180 miles. This movement was completed in 16 days and involved 609 trains, comprising about 16,800 cars, or an average of 32 trains a day, one every three-quarters of an hour through the day and night. The cavalry and three army corps were moved, including horses, guns, kit, and transport, and the operations were conducted in close proximity to the enemy.

Among the railways destroyed by the French army in their retreat before the first German advance on Paris, were the railways from Charleville, in the Department of the Ardennes to Rheims, and from Hirson, in the Department of the Aisne, to Montmedy, in the Department of the Meuse, 25 miles north of Verdun. These lines were restored by the Germans towards the end of the year, and they were also at work on the railways at Givet, on the Belgian border, and had replaced the bridges over the Meuse near Lumes, Flize, and Donchery, to the southeast of Mézières, and had opened the blocked tunnels near Montmedy and Mohon. In 1910 there were maintained by the state 38,261 kilometers of highway; 172,269 kilometers of main roads, 75,957 of byways, 285,726 other, partly or wholly maintained without state aid.

There were in 1911, 161,436 kilometers of telegraph lines, and 611,726 of wires; state telegraph stations 17,619; railway and private stations, 3645. There were 48,049 kilometers of urban telephone lines, with 965,385 of wires; and 103,288 kilometers of interurban lines, with 522,251 of wires. Post offices, 14,379. Postal receipts for the year 1911, 369,624,415 francs; expenditure (posts and telegraphs), 323,653,502 francs. Telegraphic receipts (including wireless), 46,511,246 francs. Telephone receipts, 50,434,582 francs.

Finance. The monetary unit is the franc, par value 19.295 cents. In the table below are shown in francs actual revenue and expenditure for three years.

	1909	*1910*	*1911*
Revenue	4,140,912,961	4,273,890,789	4,689,045,845
Expend.	4,186,090,468	4,321,918,609	....

The above figures include ordinary and extraordinary revenue and expenditure.

In the table below will be found details of the budget for 1913:

Revenue	*1913*	*1914*
Direct taxes	562,815,768	607,485,849
Other direct	59,518,262	68,037,892
Indirect	2,648,755,285	2,940,050,400
Monopolies	968,655,878	1,004,858,621
Sundries	499,187,800	753,085,222
Total	4,738,882,488	5,373,517,984

Expenditure	*1913*	*1914*
Public debt	1,286,423,922	1,318,324,321
Government *	20,116,488	19,859,488
Finance	358,948,858	379,839,516
Justice	58,551,727	61,522,659
Foreign affairs	20,668,037	20,943,157
Interior	141,961,939	177,421,959
War	983,224,376	1,436,491,554
Marine	467,176,109	489,124,808
Merchant marine	91,394,631	96,032,883
Instruction	309,139,995	343,882,476
Fine arts	21,778,491	21,816,836
Commerce, etc.	16,792,379	16,470,665
Labor, etc.	106,669,358	112,122,892
Posts and Tels.	344,813,845	357,786,594
Colonies	105,585,393	110,918,291
Agriculture	55,002,741	57,999,100
Public works	340,905,255	352,822,750
Total	4,738,603,584	5,373,329,449

* Executive and legislative.

The special-services budget balanced at 816,329,331 francs for 1913. The total general debt Jan. 1, 1913, stood at 31,449,083,037; floating debt, Oct. 1, 1913, 1,432,412,800; grand total, 32,881,495,837.

Army. In any discussion of the strength and organization of the French army in 1914 it must be borne in mind that no statistics or details were available at the end of the year as to its rapid expansion on mobilization or the part played in the opening months of the war of 1914. The fighting strength of the French army on the initial mobilization was estimated at 650,000 rifles, 60,000 sabres, and 3000 field guns. Mobilization was ordered on August 3, and was reported complete on August 15. It was believed that there were then assembled 21 corps and 10 cavalry divisions, exclusive of troops in Africa, which were also being put in condition for active service and to be transported to the scene of war in Europe. The administration of the army is by a general staff and several departments under the War Minister—in 1914 M. Eugene Etienne—assisted by the Conseil Supérieur de la Guerre, consisting of 12 general officers, among whom are the chief of the general staff, commander in chief in case of war, and the chief of the army staff.

The French army proper, in times of peace, is known as the Metropolitan Army and is stationed in France, Algeria, and Tunis, being distinguished from the Colonial Army, which is made up of both white and native troops, and is stationed in France and the French colonies, though both are administered by the War Minister. Service in the Metropolitan Army is universal and compulsory, and under the law of 1913 with a period of liability from the age of 20 to 48, as follows: with the colors, 3 years, joining at the age of 20; with the reserve, 11 years; with the territorial army, 7 years; with the territorial reserve, 7 years. This makes a total liability to service of 28 years, ending at the age of 48. Service in the Colonial Army is normally by voluntary enlistment. There are also colonial forces, mostly native. In times of peace, the reserve for the active army is called out twice for a period of four weeks, the territorial army once for two weeks; the territorial reserve has no regular training.

Before the war the total peace strength of the Metropolitan Army was given as 639 battalions of infantry, 445 squadrons of cavalry, 694 batteries of artillery, these numbers including 30,000 natives stationed in Algeria and Tunis. With the 620,000 Europeans in France and 53,000 Europeans in Algeria and Tunis, a total of 703,000 for the Metropolitan Army was estimated. The horses maintained for this army numbered 150,634. Adding the total Colonial Army of 87,000, there was an aggregate of 790,000 for the total peace strength. These figures for 1914 do not include administrative corps, staffs and services, military schools, etc.

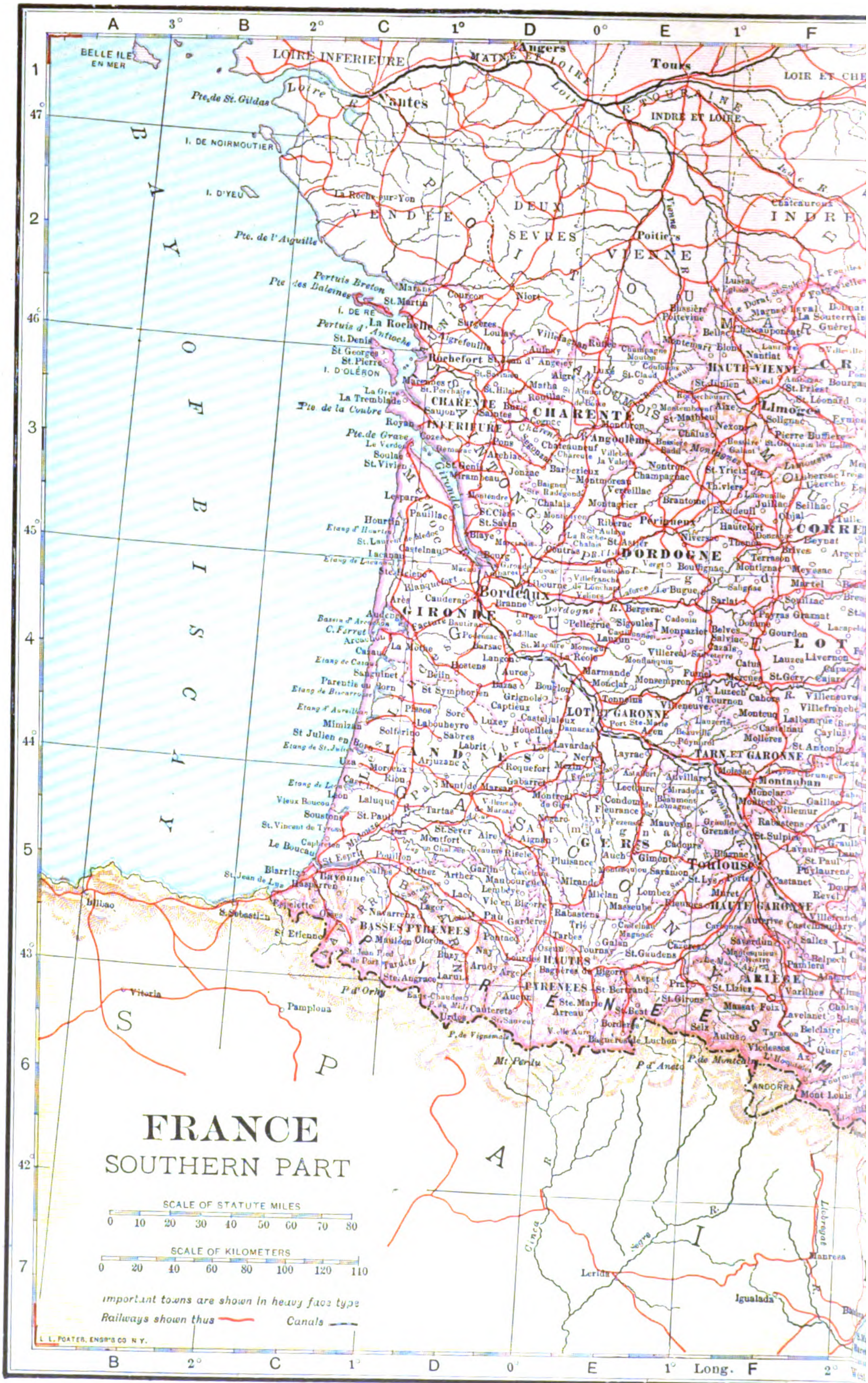
On the bases above discussed, the field army of France sent into active service might be roughly estimated at 800,000 combatants. The 36 reserve divisions and reserve cavalry would add 500,000 more. The Algerian Corps and Colonials in France, if all brought into service, would add about 80,000 men, giving a grand total of 1,380,000 combatants, available at the outbreak of war. How far the mobilization strength of 1,380,000 combatants above estimates could be increased, as war progressed, to possibly 3,000,000 all trained men, and how far it was realized or in process of realization, was of course merely a matter of conjecture, but military critics seemed to think that the French mobilization while slow was effective.

Each of the French Army Corps is recruited from a definite territorial district. At the outbreak of the war there were 20 army corps and 1 additional Colonial Army Corps in Algeria, making 21 in all. Each corps usually has 2 or 3 divisions, and each division 2 brigades. The general plan of organization gives 2 infantry regiments to a brigade, which contains from 6 to 8 battalions. To each infantry division is attached 1 field artillery regiment of 9 batteries (36 guns). The corps artillery consists of 9 field and 3 howitzer batteries, plus 6 skeleton batteries, which in time of war are filled out to give a total of 144 guns per corps. To the corps is also attached a cavalry brigade of 2 regiments and certain technical troops. The heavy batteries of 2 guns each are distributed as needed by army corps. There were at the outbreak of the war, 10 cavalry divisions, each made up of 3 brigades of 2 regiments each, to which 2 batteries of horse artillery are attached, making an aggregate for a cavalry division of 24 squadrons and 12 guns. Based on the above, the army corps, as organized on mobilization at the outbreak of the war, should have presented a combatant strength of about 33,000, the cavalry division about 4700.

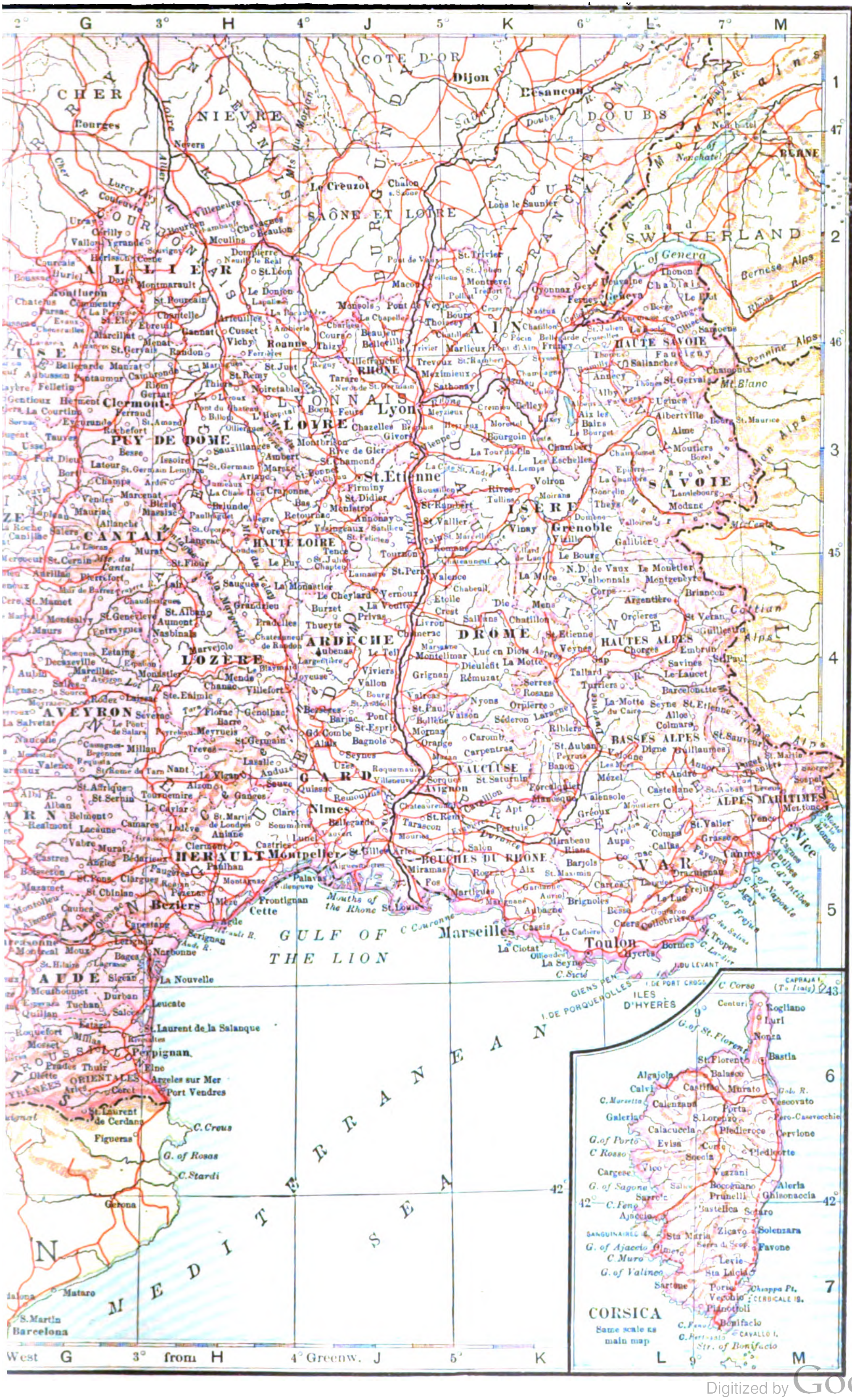
The *reserve* of the active army and the territorial army, which early in the war was drawn on, was each organized into 36 divisions, and their functions in addition were to furnish garrisons for the home stations, the surplus men being called to the regimental depots to supply the losses in battle. There would also be available for garrison duty 38 battalions of the Customs Corps and a large number of *chasseurs forestiers*, both of which classes are recruited from the army. The gendarmerie (military police), amounting to more than 20,000 men, would be available for local distributions. The police force of Paris, and *Garde Républicaine*, about 3000 strong, would be used for similar duties, although there is available little to show the extent to which use has been made of these sources.

A better understanding of the organization of the French army may be secured by considering the basic units on which that organization depends, though in 1914 it was inevitable that modifications due to mobilization and the exigencies of war should have occurred. The real basis of the French infantry organization is the battalion. Usually a battalion has 4 companies; sometimes 3, sometimes 5 or 6, or even more. The number of battalions in a regiment varies greatly. The maximum is 4 battalions to the regiment. As a rule, the infantry company has 3 officers and 140 men in peace; in war, about 250 men. The French battalion at war strength has, on the average, 19 officers and 1009 men. The basic unit of the cavalry is the squadron, composed of 5 officers and 150 men. At the beginning of 1914 the French cavalry, 79 regiments in all, serving in France, proper, were reorganized, and grouped into 10 cavalry divisions, of which 8 had 3 brigades each, and the remaining 2, the 4th and 10th, 4 brigades each. Fifteen of the brigades contained 3 regiments, while the other 17 brigades consisted of only 2 regiments each. The plans provided that at the time of war 1 regiment of cavalry, or in exceptional cases 2 or 3 regiments, were to be assigned to each army corps, these regiments being designated in special orders, but in time of peace they would remain attached to the cavalry divisions. The reorganization scheme further provided the assigning of a battalion of horse artillery and a bicycle corps to each division of the cavalry. This group was to be formed of a company or a half company of chasseurs. It is divided into three platoons and mounted on portable bicycles. It is intended to keep up with the cavalry no matter at what pace or over what rough ground the latter moves, and is to afford it instant infantry support at any desired moment.

In the French service, the battery of field artillery at peace strength varies from 3 officers and 110 men to 3 officers and 175 men, which is raised at war strength to 4 officers, possibly 5, and 175 men. The French mountain battery has about 140 men. Light batteries have 4 guns; mountain batteries, 6. All officers of artillery are on one list, and the foot artillery is divided into two branches, coast artillery, and fortress artillery. The total peace strength of foot artillery, including workmen, in 1913 was about 468 officers and 16,162 men. All technical troops are known as engineers, including the Aëronautical Corps. They aggregated in 1913 585 officers and about 18,000 men. The war strength of the major portion of the engineer companies is 4 officers and 252 enlisted men. The Aëronautical Corps, previous to the war, was organized in three groups. Each group has from 2 to 4 companies. Sections were detached with the mobile army. In 1914 there were 27 sections of 8 aëroplanes each, 10 cavalry sections of 3 aëroplanes each, and 11 fortress sections of 8 aëroplanes each, aggregating a total of 334 aëroplanes. There were also 14 dirigibles. Train troops are organized into "squadrons"; each squadron contains 3 companies. Total peace footing, 412 officers, and about 10,500 men. Sanitary troops included about 1500 officers, 6200 men; and the veterinarians numbered about 475 officers.



FRANCE
SOUTHERN PART



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Graian Alps
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Maritime Alps
Le Creuzot
Chalon s. Saône
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Briançon
Embrun
BASSES ALPES
Digne
Barcelonnette
ALPES MARITIMES
Nice
Monaco
Cannes
Antibes
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Avignon
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Nîmes
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Montpellier
Beziers
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BOUCHES DU RHONE
Arles
Aix
Marseilles
PROVENCE
VAR
Draguignan
Toulon
Hyères
ILES D'HYERES
I. DE PORQUEROLLES
I. DE PORT CROSS
I. DU LEVANT
Mouths of the Rhone
GULF OF THE LION
LANGUEDOC
AUDE
Carcassonne
Narbonne
Perpignan
PYRÉNÉES ORIENTALES
ROUSSILLON
Port Vendres
C. Creus
G. of Rosas
Figueras
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Barcelona
Mataro
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Corte
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Bonifacio
Str. of Bonifacio
Aleria
Sartene
G. of Ajaccio
G. of Valinco
G. of Porto
G. of Sagone
G. of St. Florent
CAPRAJA I. (To Italy)
SANGUINAIRES IS.
CERBICALE IS.
CAVALLO I.
9°

The French infantry use the Lebel magazine rifle; calibre, 0.315 inch. The cavalry has the carbine. The field gun is a rapid-fire shielded gun, 2.95 inch calibre, and was considered the best in Europe, and gave a good account of itself in the war. The howitzer batteries use calibres of 4 inches and 6.2 inches, and in many cases were outranged and outweighted by the Germans.

The permanent land defenses, previous to the war of 1914, were designed to protect a line of 1575 miles, and were an important strategic consideration. On the principal land frontier of Germany the fortified places were Verdun, Toul, Epinal, Belfort, behind which was a second line as follows: Maubeuge, La Fere, Rheims, Langres, Dijon, Besançon. Along the Italian front were Briançon, Grenoble, and Lyons. On the coast line the principal naval stations, guarded by the forts, were Toulon, Rochefort, Lorient, Brest, and Cherbourg.

The Budget for 1914 provided for military expenditures as follows:

For the Metropolitan Army	$209,472,660
Colonial Troops in France	9,866,280
Troops in Morocco	46,779,860
Armament and supplies	21,180,000
Total *	$287,298,800

* Expense of colonial troops abroad not included in this total.

NAVY. France ranks fourth among the nations (the United Kingdom, Germany, the United States) in the amount of warship tonnage built, and third in the aggregate of tonnage built and building. The number and displacement (built), July 1, 1914, of warships of 1500 or more tons, and of torpedo craft of more than 50 tons, were as follows: 4 battleships (dreadnought type), having a main battery of all big guns (11 inch or more in calibre), of 92,368 tons (and 8, of 193,656 tons estimated, building); 18 battleships (pre-dreadnought type, of about 10,000 or more tons displacement and a main battery of more than one calibre), of 262,675 tons; 1 coast-defense vessel, of 8800 tons; 20 armored cruisers, of 201,724 tons; 9 cruisers (unarmored warships of more than 1500 tons), of 46,095 tons; 84 torpedo-boat destroyers, of 35,812 tons (and 3, of 2563 tons, building); 135 torpedo boats, of 13,426; and 64 submarines, of 27,940 tons (and 22, of 14,766 tons, building). Total number of vessels built, 335, of 688,840 aggregate tons; building, 33, of 211,075 tons—a total of vessels built and building of 368, of 899,915 tons. Excluded from the foregoing are ships over 20 years old, unless reconstructed and rearmed within five years; torpedo craft over 15 years old, transports, colliers, repair ships, torpedo-depot ships, and other auxiliaries. The total strength of the personnel, including reserves, was about 180,000, one-third being active-service ratings. The general efficiency increased noticeably from 1904 to 1914. The main squadrons were concentrated in the Mediterranean under the command of Admiral Boué de Lapeyrère. The armored-cruiser fleet contained the *Edgar Quinet* and the *Waldeck Rousseau*, completed in 1911, and having a displacement of 13,900 tons, and an armament of 14 7.6-inch guns.

At the beginning of 1914 the fleet in the Mediterranean was made up as follows: first squadron of battleships—*Courbet*, *Jean Bart*, *Condorcet*, *Danton*, *Diderot*, *Mirabeau*, *Vergniaud*, and *Voltaire;* second squadron, made up of older battleships—*Patrie*, *Democratie*, *Justice*, *République*, and *Vérité;* reserve ships—*Bouvet*, *Gaulois*, and *St. Louis;* armored cruisers—*Waldeck Rousseau*, *Edgar Quinet*, *Ernest Renan*, *Jules Ferry*, *Léon Gambetta*, and *Victor Hugo*. The armored cruisers *Montcalm* and *Dupleix* were maintained in Eastern waters.

Dreadnoughts laid down in 1913 were the *Flandres*, *Gascogne*, *Languedoc*, *Normandie*, and *Béarn* (the latter 1914). These ships are to displace 25,800 tons and be armed with 12 13.4-inch and 24 5.5-inch guns. The three battleships launched in 1913 are the *Lorraine*, *Bretagne*, and *Provence*, having a displacement of 23,177 tons and armed with 10 13.4-inch and 22 5.5-inch guns. The *Jean Bart* and the *Courbet* were completed in 1913, having a displacement of 23,096 tons, and being armed with 12 12-inch and 22 5.5-inch guns. The *Paris* and the *France* were completed in 1914. The *Vendée* was to have been laid down early in 1915.

The submarine service is highly efficient, the vessels composing it being remarkable for their heavy armament. Air craft, April 7, 1913, included 13 military dirigibles on hand and 7 ordered; and 450 military aëroplanes on hand, including monoplanes, biplanes, and hydroaëroplanes.

GOVERNMENT. The republic, established after the overthrow of Napoleon III, Sept. 4, 1870, vests the executive in a president and a responsible ministry, and the legislative power in a senate and a chamber of deputies. The president, elected by an absolute majority of votes for seven years, chooses his own cabinet, ordinarily, but not of necessity, selected from among the members of the two chambers. The senate is made up of 300 members, age not less than 40 years, and elected by delegates for nine years. The chamber of deputies is made up of members elected by direct popular vote for four years, one to every 70,000 inhabitants. The president from 1906 to 1913 was Clément-Armand Fallières; he was succeeded Jan. 17, 1913, by Raymond Poincaré, born 1858. The ministry as composed March 18, 1914, included the following members: Gaston Doumergue, prime minister and minister for foreign affairs; M. Bienvenu-Martin, minister of justice; M. Malvy, interior; M. Naulens, war; M. Lebrun, marine; M. Viviani, public instruction; M. René Renoult, finance; M. Lebrun, colonies; M. Raynaud, agriculture; M. Peret, commerce and posts and telegraphs; M. Fernand David, public works; M. Métin, labor.

HISTORY.

THE ACHIEVEMENTS OF THE DOUMERGUE CABINET. The Doumergue Cabinet, formed Dec. 8, 1913, was essentially a cabinet of compromises. The dominant personality in the ministry was that of Caillaux, minister of finance and chief of the Unified Radical organization, the *Comité de la rue de Valois;* in the Chamber the main support of the ministry was from the Unified Radical group, influential out of all proportion to its size. It might have been expected that the Doumergue cabinet would carry out the Unified Radical policies as laid down by the Congress of Pau: (1) repeal of the three years' military service law, (2) *défense laïque* (i.e.

legislation against the religious schools), and (3) an income tax. On the first point, however, M. Doumergue's inaugural declaration flatly contradicted the Unified Radical programme by promising that the Three Year Law would be loyally applied; for, in order to obtain the support of M. Clémenceau in the Senate, M. Doumergue was compelled to compromise with M. Clémenceau's ardent militarism. On the income tax, M. Doumergue was likewise confronted with the necessity of straddling the chasm between his supporters in the Senate, who disliked the taxation of the *rente*, and his supporters in the Chamber, who insisted on taxing the *rente*. On the important question of electoral reform there was no less necessity for compromise, since the Senate had in 1913 rejected the Chamber's Bill for departmental *scrutin de liste* with representation of minorities. In the matter of anti-clerical educational legislation, and in that matter only, was there a firm agreement.

The close of the 1913 session of the Chamber on Dec. 29, 1913, left the question of electoral reform and the budget still unsettled. In regard to the army controversy, a quarrel had arisen between Senate and Chamber, because the former insisted upon including the salaries of generals in a bill which the Chamber had prepared to increase the pay of officers. When the 1914 session was opened, January 13, M. Paul Deschanel and M. Antonin Dubost were reëlected president of the Chamber and president of the Senate, respectively. The Radicals in the Chamber indicated their anti-clericalism by electing as vice-president of the Chamber, Abbé Lemire, a priest who had rebelled against the authority of his ecclesiastical superiors. He resigned office on January 19, thanking the Chamber for its demonstration of sympathy. The work of the legislative session may best be summed up under the heads of (1) the army, (2) the schools (*défense laïque*), (3) electoral reform, and (4) the income tax. In regard to the first of these, the government continued to affirm that since the Three Year Law had been enacted it should be enforced; and a *loi des cadres* was designed to effect the reorganization which the Three Year Law made necessary in the constitution of the staffs and effectives of the various arms. But in their utterances outside the Chamber, some of M. Doumergue's supporters inclined to M. Jaurès' view, that the Three Year Law ought never to have been enacted, and, having been enacted, should at once be repealed. (2) In its zeal for anti-clerical school laws (*défense laïque*) the government could count upon greater loyalty from its adherents. The bill for the defense of the lay schools and for school attendance was passed by the Chamber on January 20 by 418 to 118 votes. On January 23 the Chamber proceeded to the consideration of the School Fund Bill. An amendment extending the benefit of subsidies to private as well as public schools was defeated on January 27 by 386 to 159, and the bill was passed by the Chamber on February 2, providing financial assistance exclusively for "lay" (non-Catholic) schools. M. Viviani, as minister of education, made a remarkable speech in the Senate, laying down the principle that teachers in public schools should observe religious "neutrality" by refraining from saying anything which might offend any of the scholars. Morals were to be taught without supernatural sanction. The cases where public school teachers used their position to carry on a campaign against religion were to be considered as exceptions. In this connection it should be noted that July 7, 1914, was the date fixed, under the law of 1904, for the final closure of all congregational schools (schools conducted by religious orders). (3) In the question of electoral reform the cabinet's policy was completely stultified by the obstinacy of the Senate. On Dec. 18, 1913, the Chamber had voted by 330 to 161 an urgent resolution: "The Chamber, faithful to its votes of 1911, of 1912, and of Nov. 18, 1913, counts upon the government immediately asking the Senate to hasten its discussion of electoral reform, and maintaining before the Senate the principle of the *scrutin de liste* with representation of minorities, thrice affirmed by the Chamber and accepted by the eight preceding ministries." This M. Doumergue promised to do; but M. Clémenceau, upon whose powerful support in the Senate the government ordinarily counted, was unalterably opposed to the representation of minorities. Consequently the cabinet failed to secure the passage of its Electoral Reform Bill in the Senate, and on March 10 the Senate reaffirmed its adherence to a scheme of *scrutin de liste* without the representation of minorities. (4) The fourth measure, the income tax, which formed the central feature of the Cabinet's financial policy, encountered unyielding opposition in the Senate. A heated conflict was waged on the old question of the exemption of the *rente* from the income tax. With regard to this question, M. Caillaux, the minister of finance, was accused of having changed his attitude from day to day—first appearing to acquiesce in the exemption, and then demanding the inclusion of the *rente*—in order to cause a fluctuation in the prices of government securities on the Bourse for the profit of his friends. While both houses concurred in the clauses of the finance law which readjusted the taxes on real property and imposed taxes on movable property, including French and foreign securities, the dispute over the income tax was protracted until the end of the session, when the Chamber voted to incorporate the income tax into the finance law or budget of 1914, too late for the budget to be passed by the Senate and promulgated. Never since 1872 had the financial situation of France been worse, with a deficit of well-nigh 800,000,000 of francs staring the government in the face, and the budget for the current year not yet passed. A note should be added, recording the passage by the Senate on Feb. 20, 1914, of a bill regarding miners' pensions, which had been passed by the Chamber July 12, 1912; the bill was not particularly fortunate as a sample—about the only sample—of the government's benevolent interest in the welfare of the working classes, for a strike of the miners in March signalized their strong disapproval of the bill.

Parties and Programmes. Throughout the spring the various political groups were much concerned about the general election which was to take place in April. The Unified Radicals and Radical Socialists were chiefly anxious to maintain their cabinet in power, by whatever means, in order that they might have the advantage of the powerful influence which the Cabinet, through the local prefects, was able to exert in favor of its own candidates. The campaign platform of the Radical Socialists demanded the income tax, was favorable to imperialism in colonial policy, was vague on defense and social legislation, but emphatic in declaring, "We must put an end to the privileges which are enjoyed by the 'free schools' (Catholic schools)." The Socialist Congress at Amiens at the close of January declared that it could not join in a new *bloc* with the Unified Radicals, and urged all Socialists to vote for Socialist candidates on the first ballot in the forth-coming elections; but the close coöperation which had marked the relations of the Unified Socialist and Unified Radical groups in the Chamber was to be extended to the second ballot, in which the Socialists were to give their "free support to candidates of other parties in proportion to the vigor and the distinctness of their opposition to the Three Year Law, war, Chauvinism, and the military-clerical coalition." But M. Allemane and a minority of the Socialists were unwilling to acquiesce in the electoral alliance with the Unified Radicals, and seceded from the Unified Socialist group, explaining their action in a manifesto as follows: ". . . The resolution voted at the international congress of Amsterdam, which forbade Socialists of all nations to enter into any *rapprochement*, coalition, or *entente* with the bourgeois political parties, has been trampled under foot by the leaders of the Socialist party. These leaders have hypocritically concluded an electoral alliance with the most despicable and the most criminal of all the bourgeois parties—the Radical party. . . . The principal resolution of the Congress (of Amiens) had the effect of making the Socialist candidates mere game-beaters for the Radical party. At the first ballot they will present themselves with the programme and the flag of the party; then at the second ballot they will present the votes of the workingmen on a silver platter to the Radicalism which imprisons and shoots the toilers who legitimately rebel against capitalistic exploitation." A second significant development in the political situation was the formation of a new group under the leadership of M. Aristide Briand. In December of the previous year his great speech at Saint-Etienne had proclaimed the necessity of forming a republican *entente* to protect the republic against demagogy and revolution, and to pursue a policy of reconciliation in dealing with the Church; he supported the principle of the representation of minorities; and he attacked the Moroccan policy of M. Caillaux, which had necessitated the military conquest of Morocco, the development of the French army, and the return to the Three Year Law. On January 14 the formation of the new group, the Federated Parties of the Left (*Féderation des gauches*), was completed, and the party headquarters established in the *rue Saint-Honoré*. Some 127 parliamentarians were included in the Federation, among them ex-premier Barthou, Pierre Baudin, M. Millerand, Lucien Klotz, and M. Bérenger. M. Briand was, of course, elected president of the Federation; and with the effective assistance of M. Barthou he began vigorously to attack the Caillaux group, accusing the cabinet of equivocations, defending the Three Year Law, pleading for religious liberty as against oppressive anti-clericalism, denouncing the idea of establishing a state monopoly of education, demanding the representation of minorities in the Chamber, and urging a programme of social legislation.

THE MURDER OF M. CALMETTE. While M. Briand in the Chamber conducted the attack on the ministry's political policies, M. Gaston Calmette, editor of the *Figaro*, did not hesitate to go even further, attacking, through the medium of his journal, the political integrity and personal honor of M. Caillaux, the minister of finance and the leading spirit in the ministry. M. Calmette accused M. Caillaux "of combining his public functions as minister of finance with those of president of the board of directors of a foreign bank; of having, by an inconceivable 'negligence,' aided his friends to make a successful speculation in *Rentes* on the Bourse; of having committed a dishonest act in suspending the operation of justice for the benefit of a 'crook' (in the Rochette case); of having declared in 1901 that he had 'quashed the income tax while having the appearance of defending it.'" M. Caillaux feared that M. Calmette would publish certain personal letters in proof of these allegations—letters which revealed the liaison which had existed between M. Caillaux and the present Mme. Caillaux while M. Caillaux was still the husband of another woman. Trembling for her husband's position and her own reputation, Mme. Caillaux purchased a revolver, practiced shooting with it at a target, and went to interview M. Calmette. Not intending to kill him, she said, she momentarily lost her reason, and found herself standing in M. Calmette's office, with a smoking, empty revolver in her hand, and M. Calmette lying mortally wounded at her feet. On the evening of the murder, March 16, M. Caillaux offered his resignation from the cabinet, and after some hesitation the resignation was accepted, M. Renoult becoming minister of finance to succeed M. Caillaux, M. Malvy becoming minister of the interior to succeed M. Renoult, and M. Raoul Peret, an under-secretary, being appointed minister of commerce to succeed M. Malvy. The following day, the Rochette scandal, to which M. Calmette had made reference in the *Figaro* a few days before the murder, was brought to the attention of the Chamber by M. Delahaye. It was alleged that in March, 1911, M. Monis, who was then president of the council, had interfered with the course of justice and had interrupted the trial of a swindler, M. Rochette, at the instance of M. Caillaux. M. Monis denied it. M. Barthou thereupon produced a letter, which the then *procureur général* had written, substantiating the charges. M. Monis then resigned his post in the cabinet as minister of marine, and M. Gauthier was appointed to the post thus vacated. After a parliamentary investigation, the Chamber on April 3 acquitted M. Caillaux and M. Monis of corruption, inasmuch as their personal pecuniary interests did not appear to be involved in the case; but reproved "the abusive interference of finance in politics and of politics in the administration of justice." If M. Caillaux was fortunate in escaping with nothing more than a reprimand in the Rochette affair, his wife was even more fortunate in receiving complete exoneration for the murder of M. Calmette. Her trial, July 19–28, was the sensation of the summer. A public reading in court was given to the two love letters in which M. Caillaux had somewhat indiscreetly mingled political confessions with passionate protestations. M. Caillaux transformed the judicial inquest into a political contest by making in court an oratorical defense of his political policies, including the income tax, and strenuously repudiating the suggestion that he had acted as a traitor during the Moroccan crisis of 1911, when he had ceded a slice of the Congo to Germany. With great eloquence he avowed his love for France and protested that he was a true Republican and a patriot, whereas M. Calmette, he asserted, had been a Royalist in the pay of Germany. The acquittal of Mme. Caillaux, July 28, on the ground that she had not intended to kill M. Calmette, was therefore to be regarded as more in the nature of a triumph for her husband's political popularity than as a vindication of her own innocence.

Elections. The first ballot in the election of the new Chamber of Deputies was taken on April 16; in constituencies where no candidate received an absolute majority, a second ballot was taken on May 10. The revelation of his misconduct in the Rochette affair, and the scandals attaching to the Calmette murder case, might well have been expected to interfere with the reëlection of M. Caillaux to the Chamber. As a matter of fact he did find it necessary to fight a duel with his opponent, M. d'Aillières, as a result of the latter's veiled allusion to the Rochette affair. But in spite of all, M. Caillaux was victorious, and his party, the Unified Radical and Radical Socialist group, gained four new seats in the Chamber. The Unified Radicals, oddly enough, in their electoral campaign revived the programme of the Congress of Pau, which emphatically demanded a return to the two-year term of military service. The revival of the hitherto neglected anti-militarist plank of the platform was easily to be explained by the Radicals' desire to obtain Socialist support in the elections; but it was hardly in consonance with the policy which the Radical ministers in the cabinet had enunciated, of regarding the Three Year Law as an accomplished fact. The general result of the election was a clear vindication of the Three Year Law, an overwhelming demand for Proportional Representation, and an almost even division of opinion on the income tax. As regards the strength of the various groups in the Chamber, accurate figures are difficult to ascertain, on account of the absence of clear-cut lines between some of the minor groups; but it may at least be stated that the number of Unified Socialists was increased from 75 to 101, the number of Unified Radicals and Radical Socialists was increased from 168 to 172, and the *Fédération Républicain* (progressist) lost 38 of its 76 seats. The remarkable gains made by the two Unified groups may at least in part be attributed, first to their coöperation at the polls, and in the second place to the freely exercised power of the administration to influence elections. A new arrangement in the seating of the deputies was made, so that 11 sectors in the hall were marked off, each for a fairly distinct group, as follows: (1) on the extreme Left sat 101 Unified Socialists; (2) to their right sat 23 Republican Socialists; (3) 172 Unified Radicals and Radical Socialists; (4) a new group of 21 members, called the Republican Union, and including M. Barthou, M. Klotz, and M. Millerand; (5) the Radical Left of 66 members; (6) the 54 Republicans of the Left; (7) the Democratic Left with 34 deputies; (8) the 36 progressists of the Republican Federation; (9) the Action Libérale with 23 members; (10) the Right, of 15 members; and (11) on the extreme Right a sector occupied by 44 "*non inscrits*" who refused to affiliate with any group. There were still 11 members who had not yet announced their party, and two vacant seats, bringing up the total number of seats in the Chamber, which had been increased by five, to 602. The Federated Parties of the Left, organized by M. Briand, it should be observed, did not form a distinct group in the Chamber, but rather included deputies in several sectors.

The Short-Lived Ribot Cabinet. The newly elected Chamber assembled on June 1. On June 2 the Doumergue cabinet resigned. In recognition of the increased strength of the extreme Left, President Poincaré selected René Viviani, a Republican Socialist, to succeed M. Doumergue, but by pronouncing in favor of the Three Year Law M. Viviani lost the support of the Unified Radical *comité de la rue de Valois*, which had officially condemned three year military service. M. Viviani was therefore unable to form a cabinet. The veteran leader of the progressists, Ex-Premier Alexandre Ribot, on June 9 formed a remarkable ministry from the moderate elements of the Left and Centre:—president of the council and minister of justice, Alexandre Ribot (*Union Républicain* of the Senate); foreign affairs, Léon Bourgeois (Democratic Left, S.); interior, Peytral (Democratic Left, S.); finance, Clémentel (Radical Left, Chamber); war, Théophile Delcassé (R. L., C.); marine, Emile Chautemps (Dem. Left, C.); education, Dessoye (Rad. Left, C.); public works, Jean Dupuy (Union Rep., S.); commerce, Marc Réville (Rad. Left, C.); agriculture, Dariac (Republican of the Left, C.); colonies, Maunoury (Rad. L., C.); labor, Abel (Rad. Left, C.). In his declaration of policy, M. Ribot advocated a loan to equilibrate the budget, a general tax on income, economy, maintenance of the Three Year Law, protection of the lay schools, an agreement on electoral reform, development of insurance, and provident institutions. But the two Unified groups and the Republican Socialists voted solidly against M. Ribot, crying, "Down with the Three Years!" and overthrowing the ministry on its first vote of confidence (June 12) by 306 to 262 votes. In the meantime M. Viviani had come to an understanding with the Unified Radicals, and was now able (June 13) to form a cabinet as follows: President of the council and minister of foreign affairs, René Viviani (Republican Socialist); interior, Louis J. Malvy (Unified Radical); justice, Bienvenu Martin (Democratic Left, Senate); war, Adolphe Messimy (Unified Rad.); marine, Armand Gauthier (Dem. Left, S.); finance, Joseph Noulens (Unif. Rad.); education, Victor Augagneur (Rep. Soc.); commerce, Gaston Thomson (Rep. of the Left); colonies, Maurice Raynaud (Unif. Rad.); public works, René Renoult (Unif. Rad.); agriculture, Fernand David (Rad. Left); labor, Charles Couyba (Dem. Left, S.). Although 5 of the 12 were Unified Radicals, more than half of the new ministers had voted for the Three Year Military Service Law of Aug. 7, 1913; and the cabinet as a whole pledged itself loyally to apply the law, and to introduce bills for the military education of the youth, and the reorganization of the reserves. The antimilitarism of the Unified Radicals was apparently laid aside. For the rest, M. Viviani promised (1) an immediate loan, (2) an income tax, (3) a tax in 1915 on capital, (4) electoral reform; (5) and after the budget was settled, he would take up the defense of the lay schools, the reorganization of the schools fund, the control of secondary private schools, and post-graduate organization,—"By liberty, by propaganda, by action, the Republican party will defend the patrimony of the Revolution against the spirit of domination"; (6) finally, "it is necessary to amend the law regarding workingmen's pensions, and include pensions for invalidity, extend the domain of insurance to involuntary unemployment, and endow with more efficacious legal powers the professional syndicates in which the laborers learn by experience to accustom themselves to responsibility and to work for their economic enfranchisement." On the vote of confidence, M. Viviani failed to obtain the support of the Unified Socialists, but was assured a safe majority by the various Radical groups. Almost immediately he induced the Chamber to overcome its repugnance to borrowing, and a loan of 800,000,000 francs was authorized by the Chamber on June 19, passed by the Senate the following day, emitted July 7, and largely oversubscribed. The budget passed by the last Chamber was passed with few changes now, and in it was incorporated a general income tax, calculated upon a scale which had the effect of levying a tax of 200 francs on an income of 25,000 francs, 700 francs on an income of 50,000 francs, and so on. After the close of Parliament in the middle of July, M. Viviani accompanied President Poincaré on a visit to Russia and the Scandinavian countries, a visit which was unfortunately interrupted by the sudden precipitation of an international crisis at the end of July.

France in War-Time. The great war had come at last, the war in which France would have an opportunity to retrieve the disaster of 1870–71 and regain Alsace-Lorraine. The war found France unprepared. The sensational Caillaux trial, terminated just as Austria-Hungary was declaring war on Servia, had excited party feelings to an extreme degree. The dispute over the restoration of three year service in the army had not yet been definitely settled, and uncertainty in this respect had weakened the fundamental organization of French defense. While the Viviani cabinet outwardly consented to the Three Year Law, a strong agitation was being carried on for the repeal of the law, and the Chamber had elected to the army commission 22 antagonists along with 22 supporters of the longer term of service. During the spring sensational arraignments had been made of the inefficient military administration. As late as July 13, M. Charles Humbert, speaking in the Senate, had made a startling revelation of glaring deficiencies in the equipment of the French army; and M. Clémenceau had been moved to exclaim, "We are neither defended nor governed!" When the Chambers met in their historic session at the outbreak of the war, heard the ministry's justification of the French cause, listened to M. Poincaré's impassioned appeal to their patriotism, and voted the war supplies unanimously, pessimism gave way to resolution. The French were probably calmer than any nation; but no nation could boast a greater determination. At the beginning of the war it was feared lest the Socialists and Syndicalists, who had so strenuously opposed the Three Year Law, would be disloyal. Obsessed by some such fear, a fanatic assassinated the great leader of the Unified Socialists, M. Jaurès (consult article Jaurès); but there was in fact no cause for alarm. The Socialists in France, as in other countries, responded in the crisis with spontaneous loyalty. Two of their leaders, Sembat and Guesde, consented to enter the cabinet, which was reorganized on August 26 so as to include Alexandre Ribot, Aristide Briand, Alexandre Millerand, Gaston Doumergue, and that most zealous patriot and able diplomat, Théophile Delcassé. The enlarged cabinet was thus constituted: Premier, René Viviani; foreign affairs, Théophile Delcassé; war, Alexandre Millerand; justice, Aristide Briand; interior, Louis Malvy; marine, Victor Augagneur; finance, Alexandre Ribot; public instruction, Albert Serraut; public works, Marcel Sembat; commerce, Gaston Thomson; colonies, Gaston Doumergue; agriculture, Fernand David; labor, Bienvenu Martin; without portfolio, Jules Guesde. On September 3 the government moved from Paris to Bordeaux; but in December, after the menacing German advance on Paris had been repulsed, the cabinet was able to return to Paris. On December 22 a war session of the Chambers was convoked in Paris, and on December 23 a war budget for the first six months of 1915 was unanimously voted by both houses. It suspended the income tax until 1916, and called for the huge sum of 8,500,000,000 francs, in addition to the 6,700,000,000 previously authorized. M. Ribot announced that France had advanced 250,000,000 francs to Belgium, 90,000,000 francs to Servia, 20,000,000 francs to Greece, and 500,000 francs to Montenegro.

One of the most noteworthy results of the war, as far as the internal affairs of France were concerned, was the manifestation of tremendous loyalty on the part of the Royalists, Conservatives, and Clericals, who had been so bitterly accused by the Radicals of enmity to the republic. Most remarkable of all was the patriotism which compelled thousands of members of religious orders to return from the exile which the anticlerical Third Republic had forced upon them, and to offer their services to their country. Many thousands of priests were enlisted in the army, and fought side by side with the soldiers, or else acted as chaplains, winning praise for their courage and devotion. There was, moreover, a great revival of religious enthusiasm, not only among the women who thronged the churches praying for their husbands and sons, but also among the men, who, in the face of death, abandoned their indifference to religion. The celebration of the fête day of King Albert of Belgium was a demonstration of the great Catholic revival as well as a touching tribute to the "king without a country." With renewed hopefulness the Catholics began to speak of the resumption of diplomatic relations with Rome as a possibility of the near future; and it was repeatedly brought to notice that the new Pope, Benedict XV, and his secretary of state, Cardinal Gasparri, cherished feelings that were distinctly friendly towards France. While such prognostications were probably tinged with undue optimism on the part of the Catholics, at least it seemed certain that the struggle against "clericalism" in France had lost some of its bitterness, and that the manifest patriotism of the French Catholics would render future attacks on the Church as the enemy of the Republic extremely unlikely.

The tacit reannexation to France of those parts of Alsace-Lorraine which were occupied by French armies, needs only to be mentioned here, as its importance depended entirely upon the issue of the war. It should also be noted that Algeria and the other French colonies appeared, so far as information was obtainable, to have remained quiet during the war, and to have furnished a considerable number of native troops to fight on the battlefields of Europe. One other circumstance connected with the war deserves at least passing notice, and that is the mysterious mission of M. Caillaux to South America. At the beginning of the war M. Caillaux's well-known ability as a financier won him a post as paymaster for one army corps, with rank equivalent to that of colonel. According to a story which received wide circulation in November and was not subsequently denied, M. Caillaux found the life at Bethune, where he was stationed, inexpressibly dull, and for relief visited Paris; for this breach of discipline he had been punished by fifteen days' military detention. Subsequently he had come to blows, it was alleged, with an English officer, and on the complaint of the English commander-in-chief M. Caillaux had been dispatched to South America. Another story is that he had been approached by Germany in an effort to bribe France with Alsace-Lorraine. Consult also International Arbitration and Peace, *Bryan-Wilson Treaties;* Socialism, *France;* and War of the Nations.

FRANCHISE, Reform of. See France, *History;* Belgium, *Electoral Reform Agitation,* etc.

FRANCIS FERDINAND, Charles Louis Joseph Marie of Austria-Este. An Austrian Archduke, nephew of the Emperor Francis Joseph and late heir-apparent of the Austro-Hungarian monarchy, assassinated June 28, 1914. He was born in Graz, in the province of Styria of which his father was Governor, on Dec. 18, 1863. He was the eldest son of the Archduke Charles Louis, second of the three younger brothers of the Emperor Francis Joseph. The eldest of these three younger brothers was Ferdinand, who, under the name of Maximilian I, was the ill-fated Emperor of Mexico. To the Emperor Francis Joseph were born three children. The eldest of these was a daughter, the Archduchess Gisela; the second a son, the Archduke Rudolph; and the youngest a daughter, the Archduchess Marie Valerie. Under the laws of the Hapsburgs the eldest son is the heir to the throne, and thus the Archduke Rudolph until his tragic death on Jan. 30, 1889, was the heir-apparent. The wife of the Archduke Rudolph gave birth to no son; their only child was a daughter. The Emperor's eldest brother, Maximilian, Emperor of Mexico, was executed in 1864, leaving no children. On the death of the Archduke Rudolph the Emperor immediately recognized his second brother, the Archduke Charles Louis, as heir to the throne. He, then 56 years of age, declined the succession, saying that he was too advanced in years. He died in 1896. The succession then fell to Charles Louis's eldest son, the Archduke Francis Ferdinand. While his cousin, Rudolph, was being educated for the throne of the Empire, the tutors of Francis Ferdinand, whose prospects of becoming Emperor were then remote, were training him along strictly military and engineering lines, and within these lines he became an expert. He was commissioned a lieutenant in the Fourth Dragoons. His life as a young man was on the whole free from the scandal which was attached to many of the other members of the royal family of Austria. His earliest prominence was achieved by his morganatic marriage with the Countess Chotek (born at Stuttgart, March 1, 1868), lady in waiting to the Archduchess Isabela, wife of the Archduke Frederick. This marriage was strongly opposed by the Emperor and other members of the court, but nothing could move the Archduke's determination. He even expressed his willingness to give up his right to the throne in order that he might be allowed to marry as he wished. On June 28, 1900, the Archduke took an oath that he and the Countess would consider their projected marriage as morganatic and renounced for the Countess all future claims as Empress and for their unborn children all claims to the throne. Three days later on July 1, 1900, they were married. The Emperor then made the Countess Duchess of Hohenberg. Among the Magyars and the Slavs of the Empire there was strong opposition to the renunciation of these rights. This opposition crystallized in the Hungarian Reichsrath into protests against permitting the household laws of the Hapsburgs to override the Hungarian Constitution, which does not recognize morganatic marriages. These protests, however, had no effect. During the first years after his recognition as heir-apparent Francis Ferdinand had little to do with the governmental policies of the Empire. In recent years, however, he took over much of the detail of government from the aged Emperor. He gave his attention particularly to military and naval matters, reorganizing the army in a manner that aroused the admiration of European military authorities. Francis Ferdinand was credited with the ambition of restoring Austria to a dominant place in European politics. It is said also that he had an ambition to make his throne the moral protector of Pan-Slavism. The fact that his wife was a Slav and that she unquestionably exercised great influence over him was felt to have a strong bearing on this phase of the future of Austria. The alliance with Italy received no sympathy from the Archduke. He had the national distrust of the Italians and this feeling was heightened by his devotion to the Roman Church. The Archduke was credited with a large share in the annexation of Bosnia and Herzegovina in 1908, and this aroused feelings of hostility against him in these provinces and in Servia. The personality of the Archduke was not of the sort to make him a popular figure. His nature was cold and reserved and he made few friends. He is said to have been feared and disliked to a degree that blinded people to his real merits, which indisputably were great along certain lines. His relations with the Emperor were at times strained. During the frequent illnesses of Francis Joseph, a far greater degree of power was vested in the hands of Francis Ferdinand than had ever been intended by his uncle, and the Emperor's quiet and determined efforts to restrain him created a situation which frequently proved a cause of great embarrassment to the ministers of the Crown and to the commanding officers of the army and navy. Francis Joseph visited the United States in 1893, crossing the country from San Francisco to the Atlantic seaboard, and attending the Columbian Exposition at Chicago. He showed his acute powers of observation in the diary of the trip, which he published for private circulation on his return. The Archduke and his wife were shot by a Servian student during a visit to Sarajevo, the capital of Bosnia. For further details in regard to this event and those which followed, see AUSTRIA-HUNGARY, SERVIA, and WAR OF THE NATIONS. Three children were born to the Archduke and his wife.

FRANCO-GERMAN INTERPARLIAMENTARY ORGANIZATION. See GERMANY, *History*.

FRANZ JOSEF LAND. See, under section entitled as above, POLAR RESEARCH, *Arctic*.

FRASER, ALEXANDER CAMPBELL. A Scotch scholar and educator, died Dec. 3, 1914. He was born in County of Argyll, Scotland, in 1819, and was educated at Edinburgh University. In 1846 he became professor of logic at New College, Edinburgh, which post he held until 1856, when he was appointed professor of logic and metaphysics at Edinburgh University, succeeding Sir William Hamilton. From 1850 to 1857 he was editor of the *North British Review*. Dr. Fraser was Gifford lecturer in natural theology at Edinburgh from 1894 to 1896, and received many honorary degrees, among them that of D.C.L. from Oxford in 1883, LL.D. from Princeton in 1856, and Litt. D. from Dublin in 1902. Among his published writings are: *Essays in Philosophy; Essays, Philosophical and Miscellaneous; Locke as a Factor in Modern Thought;* and *Berkeley and Spiritual Realism*.

FRASER-TYTLER, SIR JAMES MACLEOD BANNATYNE. A Scotch soldier, died Feb. 2, 1914. He was born in 1821 in Inverness-shire. He early entered the military service and distinguished himself in the first Afghan campaign and also in the Punjab campaign of 1848–49. His reputation as a fearless fighter, however, was won during the Indian Mutiny. During the street fighting which occurred in Lucknow his horse was shot under him, and he was himself dangerously wounded. He was highly praised by Sir Henry Havelock. He received for gallantry during this period a medal and the brevet of colonel. In 1864 he was sent to relieve the officer commanding the left column of the Bhutan Field Force, and in a very short time recaptured all the posts previously lost by the British. In 1871 he was appointed to the command of the Allahabad Division, and later to that of the Umballa Division. He retired in 1879 after an active service of 37 years.

FRATERNAL INSURANCE. See INSURANCE.

F RAYS. See CHEMISTRY, INDUSTRIAL.

FREE BAPTISTS. See BAPTISTS, FREE.

FRENCH, SIR JOHN DENTON PINKSTONE. A British soldier, born at Ripple Vale, Ripple, Kent, Sept. 28, 1852. He was a naval cadet and midshipman for four years. After entering the army he served in the Sudan and Natal, and in the Boer War was a commander of cavalry, being promoted rapidly for distinguished conduct. He commanded the first army corps in 1901–07, in the latter year was made general, then was inspector general of the forces until 1911 (as well as after 1914), chief of the imperial general staff (1911–14), and field marshal, after 1913. He was knighted in 1902, and received various decorations, besides honorary degrees from Oxford and Cambridge. For a discussion of his leading part in the European War, see WAR OF THE NATIONS.

FRENCH, WILLIAM MERCHANT RICHARDSON. An American art critic and lecturer, died June 3, 1914. He was born in Exeter, N. H., in 1844 and graduated from Harvard University in 1864. He then took a special course in engineering at the Massachusetts Institute of Technology, and upon its conclusion became associated with a firm of engineers in Boston. Until 1877 he was engaged in civil engineering and landscape gardening. In the latter year he removed to Chicago and became associated with the Chicago Art Institute, then known as the Academy of Design of Chicago. He was chosen director of this institution in 1879 and held this position until the time of his death. He traveled extensively and lectured on art subjects in all parts of the United States, Canada, and in some cities in Europe. He was also prominent in literary circles and was at one time president of the Chicago Literary Club. He wrote much on art subjects and was active in the work of the Central Howard Association, whose aim is to give aid to former convicts. At one time he was president of this association. In 1897–98 he was president of the American Association of Museums.

FRENCH ACADEMY. See ACADEMY, FRENCH.

FRENCH CONGO. Now French Equatorial Africa (q.v.).

FRENCH EQUATORIAL AFRICA. Formerly French Congo. A French possession in equatorial Africa on the west coast, composed of Gabun Colony (capital, Libreville), the Middle Congo Colony (capital, Brazzaville), and the Ubangi-Shari-Chad Colony (capital, Fort-de-Possel). From the old area must be deducted roughly 280,000 square kilometers carrying a population of 1,000,000 inhabitants, ceded to Germany following the convention of March 4, 1912. This done, there remain 1,453,888 square kilometers with an estimated population of 9,000,000. This includes the territory ceded to France by Germany from the Kamerun country. The products and exports are rubber, ivory, timber, palm kernels and oil, cacao, etc. Gold, copper, and iron are mined. The chief ports are Libreville and Loango. The total imports amounted in 1912 to 19,987,455 francs, and the exports to 28,935,218 francs. The export of copper was valued at 850,000 francs. There entered at the ports in the 1911 trade, 124 vessels, of 282,657 tons; cleared, 124, of 280,804 tons. The budget for 1911 balanced at 15,263,000 francs; the debt stood, Jan. 1, 1912, at 14,784,000. The Governor-General (1914) was M. Merlin. Telegraph lines, 2023 kilometers; wires, 2175.

To obviate the use of the Belgian railway from Matadi to Leopoldville for access to her colonies, the French government decided to construct a railway from Pointe-Noir on the Atlantic coast to Brazzaville, in the neighborhood of Stanley Pool on the Congo River, and an appropriation amounting to about $18,000,000 was voted towards the project by the French Chamber, but the war will delay construction.

FRENCH ESTABLISHMENTS IN OCEANIA. A southern Pacific French colony, composed of widely scattered groups and single islands. Papeete is the capital. Total area (recent estimate), 3998 square kilometers, with a population of 30,563. The value of the 1911 export of phosphate of lime was 238,000 francs. Total imports 1912, 7,747,181 francs; exports, 8,840,255. The debt stood, Jan. 1, 1912, at 60,784 francs. The budget for 1911 balanced at 1,745,000 francs. Vessels entered in the 1911 trade, 67, of 166,588 tons; cleared, 65, of 164,513 tons. The Governor was W. M. Fawtier.

FRENCH GUIANA (CAYENNE). A French colony and penal settlement on the northern coast of South America. It covers 88,240 square kilometers, with a population in 1911 of 49,000. Cayenne, the chief town and only seaport, had (1906) 12,426 inhabitants. Gold mining (placer) is the chief occupation of the people. Imports, 1912, 10,857,307 francs; exports, 12,117,488. Export of mining products, 10,277,000 francs. Total tonnage in the 1911 trade, 57,172. The budget balanced for 1911 at 4,187,000 francs. The Governor was F. E. Levecque.

FRENCH GUINEA. One of the colonies composing the French West Africa government-general. The capital is Conakry, with 6623 inhabitants; Kankan, the chief commercial centre, has 7120; Boké, 3527; Kindia, 2280; Dubreka, 1195. The principal product of the soil is rubber, gathered throughout the colony, but especially plentiful in the Futa-Jallon, the Farana region, and in certain districts of Upper Guinea. Rice is cultivated as well as millet, manioc, sesame, and roots. Palm kernels and gums are gathered. Throughout the colony grazing is practiced, and the Fullahs maintain great herds of sheep and goats, cattle, and a few horses. The exportation of live animals has grown steadily; in 1904 the number of cattle exported was 4628, increasing to 9785 in 1908, and 10,087 in 1912. Most of these animals go to Sierra-Leone and Liberia. The total imports in 1912 were valued at 19,274,130 francs—cotton textiles, 8,686,285 francs, other textiles, 688,047; rice, 539,816; tobacco, 528,516; wines, 453,311, etc. Total exports, 20,057,925 francs—rubber, 15,095,689; live animals, 1,358,906; palm kernels, 1,026,969; hides and skins, 1,107,046; gum copal, 232,990, etc.

Transport from and into the interior is by caravan; the route from Conakry to the Niger, known as the Leprince route, is via Kinda, Timbo, and Kouroussa. There is a railway from Conakry to Kouroussa on the Niger, a distance of 588 kilometers. A branch of 74 kilometers runs from Kouroussa to Kankan; it was to be finished and opened to traffic by the end of 1914. Lieutenant-Governor, J. Peuvergne. See FRENCH WEST AFRICA.

FRENCH INDIA. A group of five French dependencies in India, covering 513 square kilometers, with 282,472 inhabitants. The towns are Pondicherry (the capital), Karikal, Mahé, Chandernagor, and Yanaon. The chief exports are oil seeds, raw cotton, and pulse. There is a railway from Pondicherry to Villapuram, and from Peralam to Karikal—in all, 30 kilometers. Imports 1912, 9,031,780 francs; exports, 37,218,209. Debt, Jan. 1, 1912, 4,844,000 francs. The budget of 1911 balanced at 6,038,000 francs. The Governor was A. A. Martineau.

FRENCH INDO-CHINA. A dependency of France in southeastern Asia, made up of five States and a strip of territory leased from China, as follows:

	Sq. kms.	*Pop. 1911*	*D.*
Annam	159,890	5,542,822	35.0
Cambodia	175,450	1,487,948	8.0
Cochin-China	56,965	3,050,785	54.0
Laos	290,000	631,839	2.0
Tongking	119,750	6,117,954	51.0
Kwangchow-Wan *	1,000	158,881	159.0
Total	†803,055	16,990,229	21.0

* Leased territory. † 310,060 square miles.

Total population in 1906, 16,315,063. Hanoi (in Tongking) is the capital, with (1911) 113,676 inhabitants; Cholon had 191,665; Bin-Dinh, 75,000; Saïgon, 64,845; Pnom-Penh, 54,621; Hué, 50,000; Vien-tiane, 20,000; Haïphong, 27,000. In the table below are given import and export values for three years in francs, trade returns being reported for the colony as a unit:

	1910	*1911*	*1912*
Imports	238,686,288	244,142,680	273,193,924
Exports	290,546,912	250,146,499	260,735,542

The production of coal and lignite in 1911 was 437,000 tons, valued at 5,217,000 francs, of which the quantity exported was valued at 2,201,000 francs; output of zinc was valued at 4,092,000 francs, of tin and tungsten, at 444,000 francs.

Some of the principal imports for consumption, and exports of domestic produce in the 1911 trade are shown in the table below, with values in thousands of francs.

Imps.	*1000 fr.*	*Exps.*	*1000 fr.*
Textiles	43,838	Cereal prods.	127,786
Metal mfrs.	17,913	Fish	16,210
Metals	14,401	Minerals	8,844
Col. prods.	13,661	Animal prods.	9,780
Stone, etc.	8,025	Oils, etc.	8,454
Cereal prods.	5,932	Skins, etc.	3,020
Fruits, etc.	5,487	Yarns	2,487
Oils, etc.	7,067	Live animals	8,450
Paper, etc.	8,948	Metals	7,079
Pottery	5,296	Fruits, etc.	8,182
Yarn	8,935	Fibre, etc.	2,428
Arms, etc.	5,119	Esparto, mfrs.	2,275
Other	....	Other	....
Total special	194,641		207,585

The budget for 1913—in piasters of 2 francs, 50 cents each—follows:

Receipts and Expenditures	
General budget	35,608,895
Tongking budget	8,226,710
Annam budget	3,976,980
Cambodia budget	4,803,000
Cochin-China budget	7,181,787
Laos budget	928,691
Kwangchow-Wan budget	296,022
Total	61,028,585

Vessels entered in the 1911 trade, 1839, of 1,681,893 tons; cleared, 1677, of 1,638,895 tons. Total length of railway, 1912, 1909 kilometers, including 467 kilometers in the province of Yünnan, China. The Saïgon-Mytho Railway has an extension under construction to Cantho. The debt stood, Jan. 1, 1912, at 245,912,509 francs. Governor-General, 1914, J. van Vollenhoven.

FRENCH LITERATURE. BEFORE THE WAR. Up to the first of August things went on as usual in the French literary world. The trend of thought indicated in preceding years developed still further, realistic and merely entertaining literature lost caste, while moral, social, and especially religious preoccupations seemed to gain ground. Of this tendency, a number of books are plain evidence. Bourget's novel, *Démon de midi* attempts to show that most men face a crisis in middle life. It may be a love affair, social or political aspirations, or the lure of money speculations which threatens to wreck their whole lives. Their salvation, either by averting danger before or by restoring order afterwards, is found to rest in the Church. Bourget has proclaimed this for years, but what is interesting is that he who was preaching in the desert all these years, finds himself now voicing the sentiments of many of the new generation. Claudel, who is a convert, emphasized in his profoundly Catholic play, *L'otage*, the notion of sacrifice in one of its most repulsive forms, as the one thing that renders human life sublime. Another one of Claudel's plays, *L'échange*, written years before, when he was in Boston, Mass., was also produced. There are no religious preoccupations in it, but we are shown a sharp contrast between the consistently developed character of an American business man, and the consistently developed character of a new emancipated woman on the one hand, and the traditional European idler, artistic temperamentally, and the old and touching ideal of the devoted feminine woman, on the other hand. Barrès gives us *La grande pitié des églises de France*, a book of the most heterogeneous character, in which the author begs all Frenchmen to unite in saving and restoring the old churches as expressing the deepest ideals of the nation. Rodin published simultaneously his *Cathédrales de France*. Anatole France wrote *La révolte des anges*, bitterly sarcastic toward Catholic orthodoxy. These books are not perhaps the most widely read, but they are representative of the temper of the hour.

Drama. The religious trend of thought just emphasized is of course a reaction against the violent conception of life that still, perhaps, obtains with the general public. Specimens of this nerve-racking tendency in literature are, besides Claudel's *L'échange* just mentioned, D'Annunzio's *Chèvrefeuille*, which develops the Hamlet theme of vengeance carried out with refined cruelty; Curel's *Danse devant le miroir;* and F. de Croisset's *L'épervier*, one more most subtle and disagreeable analysis of hyper-sensitive beings. Lavedan in his *Pétard*, gives a powerful creation of a hero who is a worthy brother of Mirbeau's Lechat in *Les affaires sont les affaires*. *La force de mentir* of Bernard and Marullier is a weird farce. The same trend is seen in Vanderem, *La victime*. The "victim" is the child who suffers from the quarrels of its parents, is alternately spoiled by them during their separation, and whose conditions are not improved after the parents are reconciled and come together again. In Villiers de l'Isle Adam, *La révolte*, produced for the first time this year, the Nora theme is here developed. Among the plays of a purely witty kind, the following are worth noting: Flers and Caillavet, *La belle aventure*, and *Monsieur Brotonneau;* Sacha Guitry, *Les deux couverts*, and T. Bernard, *Le prince charmant*. Shakespeare continues to interest Paris, and *Hamlet*, *Macbeth* (Richepin), and *Twelfth Night* were given. Hervieu has not yet given up his fatalistic view of life, but there is a note of noble resignation in *Le destin est maître*. Brieux, in *Bourgeois aux champs*, points out with his usual force another form of the mistake men make in looking for happiness where it is not, and not seeing it when it is right there. M. Donnay in *Georgette Lemeunier* (*reprise*) and Devon in *L'envolée* preach the same idea but with special regard to love. Arquillères, *Grande famille*, and Fabre, *Un grand bourgeois*, again suggest moral ideas which are only expressed in less catholic language than in Tristan Bernard's *Jeanne Doré* (played by Sarah Bernhardt), in Curel's *Nouvelle idôle* (*reprise*), or even in the printed drama of Schuré, *La Druidesse*.

Poetry. The crop is very meagre. As indicating the special source of inspiration in literature as a whole, we might mention first the long poem, *La geste de Jeanne d'Arc*, of A. P. Garnier. Ch. Péguy (killed in the war) in his *Eve* also brings in Joan of Arc. He was the famous editor of the *Cahiers de la quinzaine* in which he led a vigorous campaign against pedantry and philistinism, in favor of traditional Catholic France, and he was the author of a long poem in prose, *Le mystère de Jeanne d'Arc*. Other books of verse are: Savarit, *Elévations sentimentales;* Cécile Perrin (author of *Les pas légers*) writes *La pelouse;* Emile Herriot, *La flamme et les cendres* in which we find the delicate note of Sully-Prudhomme. P. Claudel publishes *Deux poèmes d'été*. A few months before the war E. Raynaud issued an elaborate volume, *Les deux Allemagnes* (bureaucratic and intellectual Germany). In this he expressed the hope that the enlightened people of the two countries would come to a better understanding of one another. A poet from San Domingo sent a greeting, entitled *Nostalgies françaises*, to his French fellow writers, who commented upon it with appreciation. Timothée Taret, a poet from Tahiti, publishes *L'âme vibrante*. A. Rivoire writes *Le plaisir des jours* in which we still see the influence of the Parnassian school. Cantacuzène strikes the same note in his *Mes brouillards de roses*, in which death plays a great part. This Parnassian influence because of the stress put upon form is again seen in the *Cent sonnets* of Jaubert (he had published formerly *Cent ballades*). More symbolistic is John-Antoine Nau in *En suivant les Goëlands*. Two volumes entirely out of touch with the present tendencies are F. Lovio, *Derniers rondels païens*, and E. Payen, *Vaines étreintes* (published as expurgated by the court). Vaillant publishes *Chansons inédites de Gautier d'Argies*, a Picard trouvère of the thirteenth century, and M. Allem, the *Poèmes de jeunesse* by Alfred de Musset. The periodical *Terre Latine* in its April number made a syllabus to ascertain the attitude of modern poets towards free verse, inaugurated about thirty years ago by the Symbolists; 29 answers were favorable, 80 were unfavorable, and 28 noncommittal.

The Novel. We have already quoted Bourget, *Démon de midi*, and France, *Révolte des anges*—the latter showing that even the skeptic cannot put away from him a problem which forces itself to the front, the former showing with what perfect frankness the religious, nay the Catholic, solution to this problem can be expressed. Juliette Adam (the famous *femme-de-lettres*), in her *Chrétienne*, is another striking illustration; for, thirty years ago, the authoress had published a *Païenne*, a violent anti-Christian manifesto.

Chrétienne is a "continuation" in which the heroine, who is the authoress, is converted. Y. Bertheroy, in his *Couronne d'épines* shows the woman finding in divine love a consolation against human love. Péladan in *Pomone*, the twentieth volume of the *Ethopée* started in 1884, shows also an evolution from purely pagan principles to Catholic ideals. Emile Bauman, *Baptême de Pauline Ardel*, offers the same theme as Curel in *Nouvelle idôle*, but in a much more affirmative manner, the great unbelieving scholar yielding to the consoling faith of his daughter, herself converted by a sincerely devout artist. Still betraying the same change of fundamental attitude towards the problems of life, Dulac in the *Vie et mort de M. Legentois*, shows us a professor (by accident) becoming master of a fortune. He need no longer think of the necessities of life. How then is he going to make use of his intellectual powers? He does nothing, and is almost as ridiculous as Bouvart and Pécuchet. Again, a marked return to provisionally discarded ideas, although not looking at things from the religious side: P. Margueritte, the former apostle of divorce, offers in *Nous, les méres*, a touching character—Madame Gimones, a lady who has lived according to the old conservative laws of society, accepting many things which seemed very hard, and who now enjoys the most beautiful and dignified old age. Looking towards a future with youthful hope and new ideals are the heroes of Gachon, in *Vivre la vie*. In *Les survivants*, Behaine urges us to respect, but not to be the slaves of traditions; while A. Lichtenberger expresses the same idea with even more emphasis in *Le sang nouveau*. The hero, although far from reckless, is an ardent believer in a life which allows much initiative and risk, and to this view the energetic representative of conservatism is also won over. M.Boulenger in *Le fourbe*, and L. Lefebvre in *La femme au masque* tell the oft-told story of the woman who is the victim of a silly or brutal husband. These two works are recorded here only because they come from pens which have won public attention in the past. P. Acker tells of the sad lives of the three Demoiselles Bertrand, girls without dowry. Lechartier is more in the new trend of ideas in his *Confessions d'une femme du monde*, whose heroine expresses her disappointment at society life, and enters on a career of generous sacrifice for the benefit of the poor and miserable. Two women whose names are rather well-known tell once more that the real woman of to-morrow is the woman of yesterday: In Louise Compain, *L'amour de Claire*, a feminist finally marries, and her child makes her become her true self again. In Marie Dauprat's novel, a blue-stocking is facing about in the same way, awkwardly at first, but unmistakably. The sad fate of the lower classes is depicted in Paul Brûlat, *La vie de Rirette* (the counterpart, as a girl, of *Poil de Carotte*); Lucien Descaves is not becoming less violent as he grows older. His *Barrabas* is the impersonation of the man who stands against the so-called social "order," and who is right in showing a spirit of revolt; Pierre Hamp, in *L'enquête* continues his series of novels proving by cold statistics that society must be reformed. Ch. Géniaux has a powerful novel of colonial life, *Notre petit Gourbi*. We find two "character novels" in Mille's extremely witty *Monarque*, (wit worthy of the author of Tartarin), and Miomandre's *Thérèse Beauchamps*, which pictures the unwilling platonic love of a *petite bourgeoise* of Montmartre for a very rich Chinese. H. Bordeau has written a *Croisade des enfants*. A "key-novel" which aroused some interest was Jules Case's *Salon de quai Voltaire*, picturing personalities of the period of Boulangism in Paris. Gyp in *La dame de Saint-Leu* put all her wit and life into describing a court intrigue of the English parvenue, Sophie Dawes, who, under the name of Baronne de Feuchères, tried to secure part of the fortune of the last of the Condés. The fantastic story is represented by A. Wylm in *L'amant de la momie*, and J. H. Rosny gives another of his "scientific" novels, *La force merveilleuse*, in which he imagines a change in the sun, sending to us, instead of the normal light, a light minus red, blue, or yellow rays. The result is a serious perturbation of life on the surface of the globe; it is supposed to be based on theoretic applications of known natural laws. Léon Gros, in *L'autobus évanoui* offers a similar, but amusing and ingenious application of scientific laws, in order to give the sensation of the miraculous.

SHORT STORIES. There are fewer volumes of short stories worth mentioning than usual. J. Lemaître gives a delightful *Vieillesse d'Hélène;* Binet-Valmer, *L'homme dépouillé*, fearless psychological studies; Marc Le Goupils, in *Le carrefour;* and Gaumont and Ce, in *C'est la vie*, give us two stories of life in Normandy. These are evidently influenced by Maupassant. Owing to the agitated times in Alsace last winter, Hinzelin's *Légendes et contes d'Alsace* have attracted some attention. H. Duvernois's *Le chien qui parle* contains amusing stories in the manner of Courteline. Madeleine A. Picard's *En cueillant le jour* is a sort of feminine *maurivaudage*. Ch. Oulmont has published an anthology of the best love stories of French literature in his *Chapelet de fleurs amoureuses*.

LITERARY CRITICISM. The interest in mediæval literature seems to have somewhat abated. Yet L. Foulet's *Roman de Renard* is a masterly piece of work on a subject which is of international interest. P. Champion's *François Villon*, crowned by the Academy, is another splendid piece of work. Among the rather unusual number of books dealing with seventeenth century authors are: Denys Cochin, *Descartes;* Grappe, *Larochefoucauld;* Mme. Duclaux, *Madame de Sévigné*, and Lacour, *Maîtresses de Molière*. In the eighteenth century we have Caussy, *Œuvres inédites de Voltaire;* Foulet, *Correspondance de Voltaire en Angleterre;* and Montesquieu's *Correspondance*. In the nineteenth century elaborate editions of Chateaubriand's *Correspondance;* of Stendhal's *Œuvres;* a popular edition of Vigny's *Œuvres complètes;* then books on *Vigny*, by L. Séché, and Dupuy; on *Musset*, by M. Donnay; on *Flaubert*, a series of valuable doctors' dissertations by Johns Hopkins men; finally Gustave Simon, *La vie d'une femme* (Mme. Victor Hugo), coming after his *Roman de Sainte-Beuve*. Georges Pellisier's *Shakespeare et la superstition Shakespearienne* is an elaborate and destructive criticism of the playwright from the point of view of dramatic technique.

The French Academy has lost Jules Lemaître, Henri Roujon, and Count de Mun; and has elected Bergson, Capus, and de la Gorce (an historian). No *grand prix de littérature* has been awarded because nothing seemed to deserve one.

Neither the Goncourt prize nor the prize of *la Vie Heureuse* has been awarded on account of the war. The famous Bibliothèque de Chantilly (Lovenjoul's collection, bequeathed to the French Academy) has been opened. Maeterlinck's works have been put on the index by the Catholic Church. Madame Sarah Bernhardt has at last received the Cross of the Legion of Honor. Paul Gavault has been elected Director of the Odéon theatre to succeed Antoine. The following deaths have to be recorded: Mistral, J. Claretie; Masson-Forestier, L. Séché; Jules Troubat (Sainte-Beuve's secretary); Pierre Sales; and Ch. Péguy, the most celebrated victim of the war in the literary world down to the close of the year.

DURING THE WAR. The celebration of the centenary of the Anti-Napoleonic Independence Wars in Germany, together with the Zabern affair in Alsace, favored, not a little, literature which proved later a good preparation for the war spirit. *Les Allemands à Paris sous le consulat de Napoleon*, by Holzhausen; *Au temps de l'épopée* (Napoleonic wars), *Lettre de Dupont d'Herval, chef d'Etat major à la Grande armée*, published by Vaillant; Driault, *L'unité française;* General Cherfils, *Pour l'armée;* General Percin, *Le combat*. In the meanwhile scholars were writing such books as: *Histoire générale de l'influence française en Allemagne*, by L. Reynaud; or *Essais sur les littératures française et allemande*. After August 1, all writing commonly regarded as literature stopped; yet for one who does not take the word in a narrow sense, it may well be said to be rather the contrary. It is probable that never at any time in the history of France were all classes so absolutely united as they were at the close of the year. The *Revue des Deux Mondes*, the *Illustration*, the *Revue Hebdomadaire*, the *Annales*, did not stop publication; neither did such important newspapers as *Le Temps, Les Débats, Le Journal, Le Matin*. They contained pages from the pens of the best French writers, such as Barrès, France, Margueritte, Capus, Faguet, Lavedan, Doumic, Masson, and others, even of Maeterlinck, representing Belgium. The topics were the tactics of General Joffre, the gallantry of Generals Pau and Chastelnau, deeds such as the bombarding and sacking of Malines, Louvain, Reims, and Arras. The *Annales* was giving every week extracts from some of these remarkable pages. The articles by Barrès in *L'écho de Paris* were among the best. See also Maeterlinck's article on "King Albert" of Belgium in *Le Journal*, and the "Open Letter" of Romain Rolland, the author of *Jean Christophe*, to Gerhart Hauptmann, in the *Journal de Genève*. There were rumors that the French Academy was thinking of asking Maeterlinck to become one of them in spite of the fact that he is not of French nationality. Maeterlinck wrote to ask that his Belgian brother in the field of letters, Verhaeren, be chosen in his stead, to represent the allied nations in the Academy.

FRENCH NAVY. See NAVAL PROGRESS.

FRENCH SOMALI COAST. A French protectorate on the gulf of Aden. Official report gives area, 120,000 square kilometers, the population (1911), 213,000. Jibuti, with about 11,000 inhabitants, is the capital. There are 81 miles of railway in the country (the railway from Jibuti into Abyssinia). Imports, 1912, 32,341,017 francs; exports, 45,022,169 francs. Vessels entered in the 1911 trade, 233, of 670,283 tons.

FRENCH WEST AFRICA. A French African possession composed of the following colonies and territories, with area and population (March 5, 1911):

	Sq. kms.	*Pop.*	*D.**
Senegal	191,640	1,250,590	7.0
French Guinea	238,988	1,737,346	7.0
Ivory Coast	325,228	1,216,284	4.0
Dahomey	97,200	878,504	6.0
Upper Sen. & Niger Mil. Ter. of the Niger	2,166,478	6,036,198	3.0
Mauritania	893,696	225,154	0.2
Total	3,913,280†	11,344,076	3.6

* Density. † 1,151,900 square miles.

Dakar (Senegal), with 25,630 inhabitants (of whom 2397 French), is the capital. For details of production, etc., see articles on the separate colonies and territories.

The total value of all imports for 1912 was 134,781,892 francs; of this total, imports valued at 55,336,990 francs came from France, 2,516,518 francs from French colonies, and 76,928,474 francs from other countries. Total exports, 118,567,231 francs; of which, exports valued at 57,614,182 francs were received by France, 95,281 francs by French colonies, and 60,857,768 francs by other countries. At the ports of Senegal there were entered in the 1911 trade, 943 vessels, of 2,009,078 tons; French Guinea, 613, of 697,630; Ivory Coast, 380, of 843,927; Dahomey, 468, of 620,359; Mauritania, 27, of 1141. The total debt stood, Jan. 1, 1912, at 156,277,336 francs. The Governor-General in 1914 was A. W. Merlaud-Ponty.

FRIEDMANN "REMEDY." See TUBERCULOSIS.

FRIENDS, RELIGIOUS SOCIETY OF. There are four bodies of Friends: the Orthodox, Liberal (Hicksite), Wilburite, and the Primitive. The Orthodox branch is the largest. It has, according to the latest statistics (1913), 100,568 members, 90 churches, and 1325 ministers. In the Liberal branch there are 19,597 members, 211 churches, and 98 ministers. In the Wilburite there are 3880 members, 48 churches, and 47 ministers; in the Primitive, 171 members, 8 churches, and 10 ministers. The Liberal branch shows increased activity of late. The biennial general conference held at Saratoga Springs, N. Y., in September, 1914, was well attended, and addresses were made by many prominent speakers, some of them of national reputation. During 1915 three summer schools will be held under the direction of Liberal Friends, at Swarthmore, Pa., at Waynesville, Ohio, and in Canada.

FRUIT. See HORTICULTURE.

FULL CREW LAWS. See RAILWAYS.

GAINES, REUBEN REID. American jurist, died Oct. 17, 1914. He was born in Sumter Co., Ala., in 1836, and graduated from the University of Alabama in 1855. He then studied law at Cumberland University and took the degree of LL.D. in 1857. In the same year he was admitted to the bar. He practiced law in Selma, Ala., until 1862, when he joined the Confederate army, where he rose to the rank of adjutant-general. At the close of the war he removed to Clarksville, Texas, where he engaged in the practice of law. In 1877 he was elected judge of the Sixth Judicial District of Texas, and held that office until 1885, when he was appointed to fill an unexpired term as associate justice of the Supreme Court of the State. He continued in this position until 1894. In 1897 he was appointed chief justice of the same court and held that post until 1911, when he resigned on account of ill health.

GALLIENI, Joseph. See War of the Nations.

GALLON, Tom. An English novelist and dramatist, died Nov. 4, 1914. He was born in London in 1866 and was educated privately. He started life as a clerk in a city office and next became usher in a large private school in London. He then became secretary to the mayor of a provincial town, but was obliged to give up the work on account of ill health. Starting on a tramp through the country, ideas for short stories occurred to him and he began to write. He produced a large number of novels and short stories, many of which are of considerable interest and well-written. His best known books are: *Tatterley* (1897); *A Prince of Mischance* (1897); *Rickerby's Folly* (1901); *Meg the Lady* (1905); *Jimmy Quixote* (1906). He also wrote several plays, including: *The Man Who Stole the Castle* (1900); *The Man in Motley* (1908); *The Devil's World* (1910); *The Great Gay Road* (1911).

GAMBIA, The. A British crown colony and protectorate on the west African coast. The colony includes the island of St. Mary, British Kombo, Albreda, the Ceded Mile, and MacCarthy Island, situated between the falls of Barraconda and Bathurst. Total area of the colony proper, about 69 square miles. The protected territory covers about 4000 square miles, with an estimated population of 152,000. The chief tribes are the Jollofs, Mandingos, Sarahulis, Fullahs, and Jolas. The Jolas are pagans and totally uncivilized; the Mandingos and Sarahulis are mostly Mohammedans. The Fullahs practice agriculture and grazing. Total imports, 1912, £756,853, against £807,118 in 1911; exports, £735,172, against £682,036 in 1911. Revenue, 1912, £96,222 (£86,454 in 1911); expenditure, £81,340 (£71,390). Tonnage entered and cleared, 583,458 (480,911 in 1911). Most of the exports, principally ground nuts, go to France; 35.7 per cent of the import trade is from England. Bathurst is the capital and a port of registry. Governor, in 1914, Lieut. Col. Sir H. L. Galway (W. Telfar Campbell, acting).

GANNETT, Henry. American geographer, died Nov. 5, 1914. He was born in Bath, Me., in 1846, and was educated at the Lawrence Scientific School, and the Hooper Mining School at Harvard University. From 1870 to 1879 he served at the Harvard Observatory and as topographer on the Hayden Survey. In 1882 he was appointed geographer of the United States Geological Survey and retained that position until his death. He was geographer to the tenth, eleventh, and twelfth censuses. In 1902 he was assistant director of the Census of the Philippine Islands, and of Cuba in 1907–08. In 1908–09 he was geographer of the Conservation Commission. He was one of the leaders of the movement for the organization of the National Geographic Society, was its first secretary, and became its president. He saw it grow from a handful of scientific men to a membership of more than 300,000. Mr. Gannett was also in a measure the originator of the Government map making work. As an author he wrote *Manual of Topographic Methods;* prepared the Statistical Atlases of 1880, 1890, and 1900, and was the author of: *Commercial Geography; Dictionary of Altitudes;* and *Stanford Compendium of Geography.* He also compiled a number of gazetteers and was the author of: *The Contour Map of the United States; Magnetic Declinations in the United States;* and *Forest Conditions in the United States.*

GARBAGE AND REFUSE DISPOSAL. A rational and sanitary view of garbage disposal discloses the fact that the choice of a method of final disposal rests upon a variety of local conditions the nature and bearing of which can be determined only by careful engineering study. A growing recognition of this fact has led a number of cities to employ engineers to investigate the subject for them. As a rule such an investigation results in a recommendation for either (1) an incinerating plant to dispose of garbage, miscellaneous refuse, and a part or all of the ashes, or for (2) a reduction plant to convert the garbage into grease and fertilizer base, with perhaps a refuse-sorting and utilization plant to recover saleable paper, rags, bottles, and the like, and with the use of ashes for filling low land. Garbage and refuse disposal by use for filling low lands, by dumping at sea, or by feeding to hogs, are still practiced; each may be justified by local conditions, and there is a tendency of late to employ one or the other of the three instead of incineration or reduction. Obviously, dumping at sea is out of the question for most cities. In thickly populated districts, disposal by burial, by filling, or by feeding to hogs may be impracticable, thus leaving the choice between reduction and incineration. As either process may be conducted in a sanitary manner the choice will depend upon relative costs under local conditions.

Reversion to Dumping at Sea and to Use for Filling. Berkeley, Cal., returned to disposal by dumping at sea a few months after the completion of a modern type of incinerator, during the year, and Seattle, Wash., had two of its incinerators idle and was restricting the use of the third one to the burning of dead animals and wholesale commission house refuse. At Berkeley, the return to sea dumping was said to have been due to a lowering of the contract price and a withdrawal of opposition to hauling the Berkeley refuse through Oakland streets to the dock after the incinerator was built and put in operation. At Seattle, the first of four proposed incinerators was built some years ago, Seattle being one of the earliest cities in the United States to build destructors of the British type. Careful daily records kept by the engineering department indicated good results from the incinerator. Later, two more plants were built, but meanwhile garbage disposal was transferred from the engineering to the health department, detailed record keeping seems to have been dropped, and it became necessary to largely rebuild the furnaces of at least one of the plants. Extensive use of the city refuse for filling low lands was practiced, at an officially reported cost of 14 cents per ton against $1 a ton for incineration. The refuse was spread in layers, sprinkled with a chemical agent to prevent fly breeding, and covered with a layer of the cleanest of the available ashes. The layers are repeated until the desired surface level is reached, and where necessary, new material is added in spots to restore the grade. Neither the Berkeley nor the Seattle changes in method of refuse disposal should be taken as proof that incineration, even locally, has been a failure, any more than the shutting down of reduction plants in some cities should be interpreted that they have been failures, without full knowledge of all the governing conditions. Nevertheless, at both these cities, there seems to have been at one stage or another a lack of engineering data or of acceptance of its proper interpretation, or else money would not have been laid out in incineration plants and then the plants shut down in a short time. Both incidents, as well as disposal by earth burial in some towns, and disposal by feeding to hogs in the case of a number of fair-sized cities, suggest that local conditions may render seemingly crude methods of garbage and refuse disposal quite satisfactory from a sanitary viewpoint, and much cheaper than incineration or reduction.

GARBAGE REDUCTION. A new method of garbage reduction, named the Cobwell, was announced just at the close of the year. Garbage is placed in a relatively small, air-tight tank of about three tons capacity, treated with a solvent at a low temperature so as to extract the grease without affecting the value of the tankage. The tankage, after bolting or grinding and screening, is in the form of a "meal." The high protein content of this meal, it was said, makes it valuable food for hogs or hens. The small size of the units promised to make garbage reduction commercially feasible for small cities and towns and the fact that the garbage is not exposed to the air during the treatment process was held to be greatly in its favor, since this lessens the chances for unpleasant odors. At the close of the year an existing private reduction plant at New Bedford, Mass., had been nearly changed over to the new system, a 100-ton plant was being installed at Los Angeles, Cal. (see INTERNATIONAL YEAR BOOK, 1913, for account of a notable contract here), and a small plant for the Panama-Pacific Exposition, at San Francisco, was under way.

For some 20 years after garbage reduction came into use all the works were owned and operated by private companies. A few years ago Cleveland, Ohio, built reduction works. During the year Chicago bought a local private plant which had been idle for a while and proceeded to enlarge it; Schenectady, N. Y., built one and Detroit, Mich., Akron, Ohio, and Dayton, Ohio, took steps to do so. At Chicago, it is proposed to burn the garbage and rubbish of the southern part of the city, in order to save a long haul of the garbage to the reduction works, and it is also proposed to establish a number of refuse-sorting stations to recover saleable paper, rags, and the like. At Akron the municipal garbage-reduction works will be close by the new sewage-treatment works and the sludge from the latter will be mixed with the garbage tankage to be made into fertilizer. Ultimately a refuse-sorting plant may be built alongside the Akron garbage and sewage works. At Dayton a private company reduced the garbage without cost to the city for 10 years, but on expiration of the contract in 1913 demanded $10,800 for the service. After inviting bids for a new contract five times the city finally decided to build its own plant and provided a bond issue of $55,000 for the purpose.

INCINERATION OF MIXED REFUSE, WITH STEAM UTILIZATION TO GENERATE ELECTRIC CURRENT. Although the heat from British refuse destructors is commonly used to raise steam for lighting or power purposes and although destructors of the British type in the United States are equipped with boilers there has thus far been but little heat utilization in this country except for works purposes. Early in the year a 600-kilowatt-hour steam turbogenerator was put in use at the Milwaukee incinerator, the current being sent 2 miles in an underground conduit and used to pump water for sewer flushing or cleansing. In March a garbage and refuse incinerator of the Heenan (British) type went into service at Savannah, Ga., a city of about 80,000 population, and since then steam from the incinerator boilers has been supplied to the waterworks pumping station, which is close by the incinerator house. The new Savannah incinerator has two 65-ton destructor units, two 200-horsepower water-tube boilers, an air preheater, a centrifugal fan for forced draft, a 150-foot chimney, a steam turbogenerator, to supply electric current for works, light, and power, wagon scales to weigh the incoming garbage, and various recording instruments. The incinerating plant cost $126,271. On arriving at the plant the mixed garbage and refuse is dumped from wagons into a concrete storage pit below the ground level. This pit is 11x32 feet in plan and 20 feet deep and has a storage capacity of 260 cubic yards. The refuse is lifted from the storage pit by a hoisting grab bucket, moved forward by an overhead traveling crane, and dumped from the bucket into refuse containers of about one cubic yard capacity each, located over the destructor cells. Stoking is done through one set of doors, by hand, and clinkering through another set of doors, mechanically. The clinker is pulled out by a hydraulic winch, attached to a plate described as "an upturned hoe placed on the bottom of the grate before the first charge of refuse is placed in the cell." From March 24 to September 30 a total of 14,364 tons of garbage, miscellaneous refuse, and some household ashes were burned, at a cost of $8988 or 62½ cents per ton for labor, or 41.6 cents if the fuel saved at the pumping station were deducted. With sufficient refuse to operate at full capacity the labor cost would be reduced and the fuel saving increased. The unit cost given, it should be understood, includes no capital charges and no operating expenses except labor. During the same period a total of 18,033 tons of garbage, refuse of all sorts, and household ashes were collected and hauled to the point of disposal at an average cost of $2.29 per ton, including labor, care of horses or mules, and repairs to carts and harnesses. The tonnage costs just given illustrate the higher cost of collection than of disposal. This is further illustrated by engineering estimates made late in the year for the collection and disposal of garbage, rubbish, and ashes at Albany, N. Y. Assuming a population of 120,000, a 106-ton incinerator for burning all garbage and rubbish and enough ashes to aid in combustion and produce a clinker suitable for concrete, with the remainder of the ashes disposed of by dumping to fill low land, the estimated annual cost of collection and disposal of all three classes of wastes was $1.86 per ton for collection and $0.30 per ton for disposal, after deducting the value of steam and clinker. These figures are not directly comparable with the Savannah costs, because the Albany estimates are for all expenses, including 7.356 per cent per annum for capital charges, and because various local conditions in the two cities materially differ. At Albany the steam would be used to pump sewage.

REFUSE SORTING AND UTILIZATION. Where garbage is disposed of by reduction it is necessary to keep it free from miscellaneous refuse and from ashes. The ashes, if gathered separately, are useful in most cities for filling. The miscellaneous refuse contains saleable material, but this must be separated into kinds and from the unsaleable material. To do this most efficiently miscellaneous refuse is collected separately and hauled to a sorting plant. Of the relatively few such plants built the largest one is located at Pittsburgh, Pa., where the American Reduction Co., which has the contract for both garbage and refuse disposal, has for some years operated a garbage reduction plant and has recently built an up-to-date plant for sorting out saleable refuse and burning the useless remainder. A reënforced-concrete building 53x200 feet in plan and several stories high, with concrete slab roof supported on steel trusses, is located on a hillside so that the refuse wagons can dump on the upper floor and the marketable refuse and the ashes from the furnaces can be easily loaded on cars on a concrete railway trestle at a lower level along the other side of the building. The refuse wagons dump their contents into large storage hoppers, ingenious mechanical contrivances being used both to open the trap doors of the hoppers and to dump the refuse. Between the two parallel hoppers there is an inclined conveying belt. The refuse is pulled from the bottoms of the hoppers onto this belt. Sorters on either side of the belt pick out the different kinds of saleable refuse as it comes before them. Each sort of baleable material is then thrown into a separate bin, the hopper bottom of which is alongside a baling press on the floor below. Bottles go down a spiral chute of galvanized steel, are received on wood slats, and sorted into kinds. Tin cans go to a separate bin. The worthless refuse or tailings are taken by a traveling belt to a steel hopper, from which the material is passed through inclined chutes to either one or the other of two Stirling refuse destructors, each of which is equipped with a 250-horsepower water-tube boiler. After passing the boilers the hot gases go to a regenerator and heat air which is returned to the destructor to assist in the combustion of the tailings. The boiler steam is more than enough to drive the engines which generate electric current for works purposes. It is expected that the surplus steam will be sold. See *Engineering News*, April 30, 1914, for illustrated description of the Pittsburgh plant. Refuse utilization by a much different plan was practiced in Denver, Colo., under direction of the Board of Charities and Corrections. The refuse was taken to the municipal yard and there sorted and baled by transient men and women at the rate of about a carload a month.

GARDEN SUBURBS. See CITY PLANNING.

GAROFALO, ANTONIO. An Italian physician and medical writer, died in Rome in July, 1914, aged 47. He was editor-in-chief of the *Clinica Ostetrica*, and under the pen name of Dr. Cajus was long prominent in matters relating to the organization of the medical profession. He was also for 17 years editor of a department in the *Policlinico*, which dealt with economic and other questions relating to the material side of medical practice.

GAS, NATURAL. The output of natural gas in the United States in 1913 was the greatest in the history of the industry. It surpassed that of any previous year in both quantity and value of gas produced. The returns, however, show a decrease in the quantity and total value of the gas consumed for domestic use in 1913 as compared with 1912, but an increase in the average price per 1000 cubic feet. This decrease in domestic consumption was offset by the increase in the quantity and value of gas used for industrial purposes, for which there was at the same time an increase in the average price per 1000 cubic feet. One of the important features of the industry in 1913 was the greater effort made to conserve the natural-gas resources of the country by saving the gas from oil wells by improved methods of drilling, by the installation of a greater number of plants for the extraction of gasoline from casing-head gas, and by the closing in of the "wild" well in Louisiana. Another important feature was the completion of pipe lines and the successful introduction of gas into cities and towns of Indiana from the great gas fields of West Virginia and the completion of the pipe line from the Midway field of California to southern California. Natural gas was introduced into Los Angeles and surrounding towns, the distance from the gas field to points of consumption being about 120 miles.

The total gas production in 1913 was estimated at 581,898,239,000 cubic feet, valued at $87,846,677, an average price of 15.10 cents per 1000 cubic feet, as compared with a production of 562,203,452,000 cubic feet, valued at $84,563,957, an average price of 15.04 cents in 1912. Of the total product, about 32 per cent was utilized for domestic purposes at an average price of 27.33 cents per 1000 cubic feet, and 68 per cent was utilized for industrial purposes at an average price of 9.4 cents per 1000 cubic feet. West Virginia produced in 1913 the largest value of natural gas, $34,164,850. Pennsylvania was second, with $21,695,845, and Ohio third, with $10,416,699. The other States of chief importance are Oklahoma, Kansas, California, New York, and Indiana.

GAS ENGINES. See INTERNAL COMBUSTION ENGINES.

GASES. See PHYSICS.

GEMS AND PRECIOUS STONES. The total production of gems and precious stones in the United States in 1913 was valued at $319,454, approximately the same as in 1912. The most important gem produced was the sapphire, the production of which was valued at $238,635. Second in value was opal, valued at $15,130; agate third, valued at $8895; turquoise fourth, $8075; diamonds fifth, $6315. Diamond-mining was carried on in several of the States. The Arkansas diamond field received more active development in 1913 than in any previous year. Several hundred diamonds were found. In Alabama a beautiful diamond crystal was found in St. Clair County. It weighed 2.41 metric carats. The following table gives the precious stones found in the United States in 1912–13, with their value.

PRODUCTION OF PRECIOUS STONES IN THE UNITED STATES, 1912-13

	1912	*1913*
Agates, chalcedony, onyx, etc.	$9,978	$8,895
Amethyst	363	889
Benitoite	150	....
Beryl, aquamarine, blue, pink, yellow, etc.	1,765	1,615
Californite	275	152
Catlinite	....	....
Chiastolite	....	....
Chlorastrolite	350	....
Copper ore gems, chrysocolla, malachite, etc.	1,085	2,350
Chrysoprase	220	....
Cyanite	10	....
Diamond	*a* 1,475	*a* 6,315
Diopside	....	....
Emerald	2,375	....
Epidote	10	....
Feldspar, amazonstone, sunstone, etc.	1,810	1,285
Garnet, almandine, pyrope, hyacinth, etc.	360	4,285
Gold quartz	1,900	300
Jasper, petrified wood, bloodstone, etc.	6,005	5,275
Opal	*a* 10,925	*a* 15,130
Peridot	8,100	375
Phenacite	....	....
Prase	....	25
Pyrite	265	50
Quartz, rock crystal, smoky quartz, rutilated quartz, etc.	2,448	1,640
Rose quartz	865	387
Rhodocrosite	....	....
Rhodonite	550	165
Ruby	2,260	200
Rutile	....	....
Sapphire	*a* 195,505	238,635
Smithsonite	650	50
Spodumene, kunzite, hiddenite	18,000	6,520
Thomsonite	450	....
Topaz	375	786
Tourmaline	*a* 28,200	7,630
Turquoise and matrix	10,140	8,075
Variscite, amatrice chlorutahlite, utahlite	*a* 8,450	*a* 6,105
Miscellaneous gems	4,408	2,920
Total	319,722	319,454

a Estimated or partly so.

The imports of precious stones into the United States in the calendar year 1913 were the largest ever recorded—$45,431,998. This exceeded the imports of 1912 by $4,068,673. The principal increase was in diamonds, the greatest increase being in rough or uncut stones. On the other hand, the imports of precious stones during the fiscal year ending June 30, 1914, decreased over $15,000,000 in value from those of 1913. The large decrease may be explained by heavy importations during the middle of 1912–13 to take advantage of the duty then prevailing, since the increase of duty under the new law was expected. Changes in the duty on precious stones imported into the United States under the tariff act of Oct. 3, 1913, included the following: Diamonds and other precious stones, rough or uncut, not advanced in condition, are removed from the free list and made dutiable at 10 per cent ad valorem. Pearls, diamonds, and other precious stones, cut but not set, suitable for the manufacture of jewelry, are raised from 10 per cent to 20 per cent ad valorem.

Diamond Production in South Africa. The production of diamonds during the fiscal year 1913 by the De Beers Consolidated Mines amounted to 2,293,468 carats, as compared with 2,087,392 carats in 1912. Actual sales of diamonds amounted to £6,297,782. The Premier Diamond Mining Company produced 2,107,983 carats of diamonds and the value of the total production was $11,216,000.

GENÉE, Rudolf. A German Shakespearean reader and author, died Jan. 20, 1914. He was born in Berlin Dec. 12, 1824, studied wood carving under Professor Gubitz, and was a student in the Royal Academy of Art. He served as editor of the *Danziger Zeitung* in 1859–61, and of the *Koburger Zeitung* in 1861–64. From 1865 to 1887 he became widely known in all important German cities, in Russia, and in Vienna as a successful reader of Shakespearean plays. Genée wrote several noteworthy plays, of which the best, *Das Wunder*, a comedy, was performed at the Court Theatre, Berlin, in 1854. His other dramas include: *Ein Neurer Timon* (1856); *Vor den Kanonen* (1857); *Gastrecht* (1884); *Die Klausnerin* (1885). He also wrote many volumes on the history and development of the drama in Germany and England.

GENERAL EDUCATION BOARD. See Universities and Colleges under section entitled as above.

GENERATORS. See Dynamo-Electric Machinery.

GEOGRAPHICAL SOCIETY, American. A body organized in 1852 for the purpose of investigating and disseminating new geographical information, with headquarters in New York City. During 1914 the society made large additions to its books and maps collections; provided 12 lectures for its members; gave five exhibitions of photographs and maps, which were attended by about 25,000 people; published under the title *The Memorial Volume of the Transcontinental Excursion of 1912 of the American Geographical Society*, 26 scientific papers, mostly by foreign participants in the excursion; and printed in its monthly *Bulletin*, which covers over 1000 pages annually, a comprehensive survey of all phases of geographical work, including literature and maps, throughout the world. The society has about 1200 members. The officers are as follows: President, A. M. Huntington; vice-presidents: Walter B. James, James Greenough, Anton A. Raven; foreign corresponding secretary, William Libbey; domestic recording secretary, Archibald D. Russell; recording secretary, Hamilton F. Kean.

GEOGRAPHIC SOCIETY, National. The National Geographic Society, with headquarters in Washington, D. C., was organized and incorporated Jan. 27, 1888, "for the increase and diffusion of geographic knowledge." It has a total membership of more than 350,000. The society publishes the *National Geographic Magazine*, which goes to its members. Since 1900 it has made annual grants of money from its income for the promotion of geographic research. During 1913–14, in coöperation with Yale University, it has supported the geographical, geological, and archæological researches of the Hiram Bingham Expedition to Peru. It has sent an expedition to Alaska to investigate the eruption of Mt. Katmai, another to the Caribbean to report on the eruptions of Mt. Pelée and La Soufrière, and another to Messina to study the earthquake there. Its expedition to Alaska for the study of the glaciers of that region spent three seasons in the field, and its report, covering the whole range of glacial behavior, has just been published by the society. The expedition of Robert E. Peary, which was successful in its effort to discover the North Pole, was in part financed by the society, as has also been the case with the Amundsen expedition, now in

Arctic waters. Henry Gannett, the president of the society, died Nov. 5, 1914. Gilbert H. Grosvenor is its director and editor.

GEOLOGY. Work in this science during 1914 resulted in the usual volume of contributions, altogether a literature of enormous proportions but which consisted for the most part of routine papers and reports or treatises upon local and special topics that make no very wide appeal. In the present article attention will be restricted to a few of the subjects under investigation and more particularly those having a more general scope or value. One of the principal fields of activity, naturally, was the preparation of areal maps, which is being carried forward quietly but steadily by governmental surveys in the United States, Canada, and other countries. The maps that are issued from time to time show the distribution and character of the rock formations and many other details; they are of great practical value to engineering, mining, and agriculture, and form the basis for much of the work of the independent investigator in the different branches of geology.

RECENT PUBLICATIONS. Among the year's publications may be named several new treatises as well as the final report of the proceedings of the Twelfth International Geological Congress which was held at Toronto in the summer of 1913. The latter volume contains a series of papers on selected topics, contributed by some of the foremost workers in their special fields, so that it is a valuable compendium for those who would follow the recent trend of thought. Note of some of the articles will be found in another place. To students of economic geology Lindgren's *Mineral Deposits* was perhaps the most interesting of the publications of recent date. It belongs to the limited class of notable works on a subject in which American geologists have long been prominently active. Compared with other treatises its distinctive feature is the emphasis placed upon the study of genesis as the guiding principle in the classification of mineral deposits. *Igneous Rocks and their Origin* is the title of the volume in which Daly has collected most of his recent researches and speculations, many of which have already appeared in print. A very practical text for fieldworkers is Leith's *Structural Geology*. Another work of importance is the *Principles of Stratigraphy* by Grabau which records the later advances in that department of geology.

ANTIQUITY OF MAN. A work entitled *Antiquity of Man in Europe* by James Geikie gives a résumé of the evidences bearing upon the history of the human race on that continent and seeks to correlate the data with the time scale of geology. In regard to the earliest or Chellean stage of development Geikie holds that it dates back to the second Interglacial epoch, while the succeeding Mousterian stage belongs to the third Glacial and the following Interglacial epochs. This is also the conclusion of the noted German investigator Penck who recognizes four Glacial and three Interglacial epochs. The Chellean industry is believed to be from 250,000 to 500,000 years old, and the whole Glacial period is placed at from 500,000 to 1,000,000 years. Man may have existed in Europe at the time of the first Interglacial epoch if not still earlier. These conclusions, it may be remarked, are supported by the facts revealed in the more recent discoveries of human remains of which note has been made in earlier YEAR BOOKS.

PRE-CAMBRIAN FORMATIONS. The complexity of the problems surrounding the establishment of the sequence of the very ancient rocks included in the Pre-Cambrian is well brought out in the series of papers presented before the Congress of geologists held in Toronto, wherein a number of different schemes are proposed. These do not necessarily reflect differences of opinion in regard to the interpretation of the evidences, as they are largely the outcome of observations in separate areas. It is quite evident that the sequence of deposition is not the same in all areas, and the correlation of formations in widely separated regions is at present impracticable, or at least has no secure basis such as is available in the fossil-bearing formations. The prevailing tendency, apparent from the several papers read by geologists from the United States, Canada, Great Britain, Finland, and India, is to make use of such arrangement and terminology as are most suited to the region or country in which the observations have been collected.

ISOSTASY. The theory of isostasy, which considers the earth's crust to be in a state of delicate equilibrium and that the projections or mountain areas imply a deficiency of density in their substratum and the depressions like ocean basins an excess of density, has come into prominence as a topic of discussion among American geologists, largely perhaps from the strong support that it received by the investigations of Hayford, which were noticed in an earlier issue. One of the more important contributions upon the theory during the past year was that of Barrell, who gave a critical review of the articles hitherto published, and examined its competency to explain certain physical features. He was of the opinion that the larger segments of the earth—those of continental and oceanic proportions—are actually in isostatic balance, but that the minor irregularities which enter into the landscape, such as hills and valleys, have been sculptured by external forces and are sustained in their place by rigidity of the crust. Between the two extremes are mountain ranges, plateaus, and basins, in the production of which tangential forces, erosion, and sedimentation all have coöperated. The question arises, thus, as to just where isostasy begins to be effective. A test for that problem may be found in certain geologic processes like the building of deltas, the shifting of load upon the superstructure arising from climatic change, and in the features arising from erosion cycles. From them Barrell concludes that in the case of continents and oceans a high degree of isostasy is apparent, but, on the other hand, there is little of such adjustment within areas of moderate dimensions, up to 200 or 300 kilometers diameter, or in those of limited relief. Individual mountains and mountain ranges may stand by virtue of crustal rigidity. Even under level plains great loads are permanently borne, as instanced by the great delta plains. Isostasy, then, is perfect or imperfect or nonexistent according to the size and relief of the area in question. Isostatic adjustment takes place through movement in the subcrustal zone which transmits the pressure and equalizes the stress differences. This zone is of great depth and possesses plasticity, but is not actually fluid. It is a real zone between the lithosphere above and the centrosphere below and may well be called the asthenosphere or zone of weakness. This zone lies so deep that it is incapable of producing folding in the superjacent strata by drag, contrary to the view of some writers.

EARTH'S RIGIDITY. Michelson made some interesting experiments with a specially designed apparatus to determine the effects of the sun's and moon's attraction upon the shape of the earth. The same subject had been previously investigated by G. H. and Horace Darwin, but they were not able to attain any very definite results further than to show that the earth is a very rigid body. Michelson, however, succeeded in getting fairly concordant readings from his instrument which point to the conclusion that the earth's rigidity is greater than that of steel and that its viscosity is also of the same order of magnitude. Consequently the old view of a fluid or semifluid interior supporting a relatively thin crust seems definitely disproved, although the actual temperature in the interior is sufficient to produce fusion if the pressure were relieved. The result of the pressure is to increase the rigidity and viscosity. The results thus far obtained by Michelson lead to the hope that by the new method the earth tides may be measured with satisfactory accuracy.

PERMANENCY OF THE CONTINENTS. The permanency of the continents and ocean basins in a broad sense may be deduced, according to T. C. Chamberlin, from our knowledge of dynamic processes, notably isostasy, and from stratigraphic and paleontologic evidences. It may not be inferred, however, that there have been no encroachments of the oceans upon the continents or extensions of the latter at the expense of the seas; on the other hand, the dividing lines have shifted more or less in response to pressure from the sea or outward creeping of the land; but there is every reason to believe that the continents and ocean basins have always existed in their present approximate positions. Migrations of the shore lines have brought, now and then, continental mountain folds and blocks within the abysmal zone, and at other times sections of the sea bottom have been upraised into land. Certain areas have been subject to such movements more than others. The Antillean region where the two continental segments and the Atlantic and Pacific basins practically join is an unstable hinge area in which marked fluctuations of level have occurred for a long time in geologic history. The oceanic deposits of the island of Barbados afford perhaps the best proof of the lifting of a deep sea-bottom into land. Similar deposits on the islands of Haiti, Cuba, Jamaica, and Trinidad may be indicative of uplift from great depths, although in their case the evidences are less conclusive. Such disturbances are exceptional at any rate and do not affect materially the broad generalization that the ocean basins and continents are permanent. In Jamaica, Haiti, and Cuba the summits of the highest mountains are not mantled by such deposits, so that it is likely these islands suffered only moderate submergences.

VOLCANIC EMANATIONS. Additional results from the recent study of the Hawaiian volcanoes by American geologists have appeared, the most recent contribution being by A. L. Day, who reported upon the nature of the gases that issue from the vent of the Halemaumau crater. Although the investigation of volcanic gases has been repeatedly undertaken by geologists, the results hitherto obtained have been open to more or less criticism on account of the almost insuperable difficulties encountered in securing samples free from contamination. In the present instance it is believed that the effort to secure pure samples has been successful. The gases present are water vapor, carbon dioxide, free hydrogen, and free sulphur, with chlorine, fluorine, nitrogen, and perhaps ammonia in small quantity. None of the rare gases was found. Inasmuch as contamination was avoided, it is concluded that the gases named participate in volcanic activity at great depth. At the temperature at which they issue, they cannot be in equilibrium, but are in process of change by which they give out much heat and thus are probably potent agents in maintaining fluidity in the lava. The absence of argon from the list of gases indicates that a meteoric source of supply is out of the question. The presence of water vapor was established beyond all doubt, and Day thinks that the compound is traceable to reaction of the hydrogen with sulphur and carbon dioxides.

UNDERGROUND WATERS. The origin of the deep-seated waters which play an important part in the phenomena of volcanism and through their work of solution and deposition of mineral materials contribute to the formation of ore-deposits is a problem that has received much attention. Two general theories are currently held: according to the one the waters are magmatic or a constituent part of the highly-heated core of the earth—the so-called juvenile waters of Suess; the second explanation is that they are a part of the meteoric supply carried down into the earth so far as to reach the region of high pressure and temperature. The difficulty in the way of accepting the latter explanation is to account for the penetration of surface waters through the great thickness of rocks which necessarily increase in compactness with depth. Capillarity has usually been appealed to as the chief factor in promoting passage of the waters, and of its agency geologists have sought confirmatory evidence in the experiment of Daubrée, who showed that water will penetrate sandstone against a certain pressure of water vapor. A recent contribution from the Carnegie Geophysical Laboratory by Johnston and Adams reviews the work of Daubrée and points out that the conditions of his experiment are far from being the same as are met with in the capillary movement of waters in the earth. Moreover, the amount of water that can pass through rocks whose pores are small and discontinuous is relatively small below depths of 500 meters, although minor quantities may penetrate to 1500 meters. Capillary forces diminish steadily with rise of temperature and in the presence of heated materials they are only important when the pores are small, so small that only insignificant amounts of water could pass through them. The argument on the basis of capillary attraction, therefore, seems opposed to the derivation of deep-seated or magmatic waters from the meteoric circulations.

ANCIENT CLIMATES. In a suggestive work on the past history of climate, issued by the Carnegie Institution, Huntington advocates the view that there is manifest a pulsatory change of climate and that the change may go forward very rapidly, so that the population of an arid or semiarid region may be reduced in a single generation. This applies particularly to the arid parts of America. The changes there, within the last 3000 years, have been small compared to those which took place after the culmination of the last glaciation, but they are of the same nature. They mark the continuation of the geologic past into the present time. Chapters by Schuchert interpret the evidences of fossils and those deduced from the nature of the sediments as to the character of climates of earlier geologic time.

ORE-DEPOSITS. F. H. Hatch, in a review of prevalent theories as to the derivation of metallic deposits, finds that the various types of deposits may be classified after a simple scheme which has for its basis two principles—the agency concerned in the formation of the ore and the nature of the product. The agent or vehicle of concentration of ores includes: (a) Molten magmas; (b) gases and vapors above the critical temperatures; (c) deep-seated waters whether of magmatic or meteoric origin; (d) vadose waters; (e) chemical and bacterial agents in lakes and seas; (f) mechanical agents, inclusive of moving water and of wind. According to the kind of concentrate ore-bodies may be divided into: (1) Igneous differentiates; (2) cavity fillings; (3) metasomatic replacements; (4) stratified or sedimentary deposits; (5) residual deposits. By arranging the two series of features in horizontal and vertical columns, all the different types may be placed in one or another of the divisions formed by the intersections of the two columns.

The rapid expansion that has taken place in the production and use of metals has brought to the fore the question as to the adequacy of the supplies for the future. One of the important factors that enter into consideration is the possibility of conducting mining operations successfully at great depths and another is the changes to be anticipated in the nature of the ores with depth. The results thus far attained in deep mining for different metals have been briefly summarized by Kemp in a paper presented at the Toronto meeting of the International Geological Congress. At present the deepest shafts, a little over a mile, are in the copper district of Lake Superior, and experience there indicates that mining may be carried on to about twice that depth, so far as the engineering features are concerned. The record of experience, however, shows that most ores decrease in value after a moderate distance from the surface has been passed. In the case of copper sulphides, gold-bearing pyrite, and the sulphides of lead and zinc, the distribution of values is affected by changes which have taken place in the veins after their deposition. The result is a vertical zonal arrangement of the vein minerals, divided into an upper oxidized zone, a middle enriched zone, and a lower zone of sulphides. The oxidized zone lies close to the surface. The zone of enrichment depends upon variable factors but ordinarily its extent cannot be very great. Copper is the metal most subject to enrichment and in its case the enriched zone may extend for several hundred feet below the permanent water level. The zone of sulphides represents the original condition of the minerals as they were deposited in the vein by the uprising heated solutions. The extent of this zone can scarcely be inferred, but there seems to be no reason to suppose that the ore deposition may not have taken place at greater depths than have yet been reached, although the most favorable conditions probably exist in the portion of veins above the limit of 2000 to 40,000 feet from the surface. See also VOLCANOES; EARTHQUAKES; MINERALOGY.

GEOPHYSICAL LABORATORY. See CARNEGIE INSTITUTION.

GEORGE II, Duke of Saxe-Meiningen and Heidburghausen, died June 25, 1914. He was born in 1826. He served with credit in the Franco-Prussian War, and after the war devoted himself largely to furthering German dramatic art. He made the Court Theatre at Meiningen the greatest centre of the drama in Germany. He was three times married, first to Princess Charlotte of Prussia, who died; then to Princess Feodora of Hohenlohe-Langenburg, who also died. Later he contracted a morganatic marriage with Helene Franz, an actress, whom he created Baroness of Heldbourg. The duchy of Saxe-Meiningen is one of the independent States of the German Empire. George II is succeeded by his eldest son, Bernhar, born in 1851. The latter married Princess Charlotte of Prussia, eldest sister of Emperor William.

GEORGETOWN UNIVERSITY. An institution for higher education, under the auspices of the Roman Catholic Church, founded in Washington, D. C., in 1789. The students enrolled in the several departments of the university in the autumn of 1914 numbered 1374. The faculty numbered 171. George E. Hamilton was appointed dean of law; Rev. Thomas I. Gasson dean of the graduate school; and Dr. Shirley W. Bowles dean of the dental department. There were no noteworthy benefactions received during the year. The library contains 124,000 volumes. The president is Rev. Alphonsus J. Donlon.

GEORGE WASHINGTON UNIVERSITY. An institution of higher learning in Washington, D. C., founded in 1821 as Columbian University. There were in all departments of the university in 1914, 1611 students. The faculty numbered 189. The only change of importance in the faculty during the year was the resignation of Dean Gregory of the law school and the appointment of Everett Fraser to take his place. The productive funds amount to about $135,000 and the total income to about $200,000. The library contains about 45,740 volumes. The president is Charles H. Stockton.

GEORGIA. POPULATION. The estimated population of the State on July 1, 1914, was 2,776,513. The population in 1910 was 2,609,121.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. Bu.*	*Value*
Corn	1914	4,000,000	56,000,000	$47,600,000
	1913	4,066,000	63,028,000	57,351,000
Wheat	1914	140,000	1,694,000	2,270,000
	1913	140,000	1,708,000	2,050,000
Oats	1914	450,000	9,000,000	6,300,000
	1913	420,000	9,240,000	6,283,000
Rye	1914	13,000	121,000	182,000
	1913	13,000	124,000	167,000
Barley	1914	.....	......	......
	1913	.....	......	......
Rice	1914	1,100	31,000	28,000
	1913	500	16,000	13,000

		Acreage	*Prod. Bu.*	*Value*
Potatoes ...	1914	13,000	780,000	819,000
	1913	12,000	972,000	1,021,000
Hay	1914	250,000	*a* 338,000	5,476,000
	1913	250,000	350,000	6,265,000
Tobacco ...	1914	1,900	*b* 1,900,000	475,000
	1913	1,800	1,800,000	558,000
Cotton	1914	5,375,000	*c* 2,650,000	87,384,000
	1913	5,318,000	2,317,000	141,722,000

a Tons. *b* Pounds. *c* Bales.

MINERAL PRODUCTION. The production of coal in the State in 1913 was 255,626 short tons, valued at $361,319. This was the largest production since 1898. Compared with 1912, it shows an increase of 28,123 short tons in quantity and $22,893 in value. The maximum production of coal in Georgia was 416,951 short tons, obtained in 1903. For the next eight years, except in 1907, the output steadily declined until a minimum of 165,210 tons was reached in 1911. A revival of activity is indicated in the returns for 1912 and 1913. The decrease in production from 1903 to 1911 and the increased output in 1912 and 1913 were due entirely to peculiar labor conditions and not to the state of trade and market requirements. Prior to 1904 the principal labor employed in the coal mines of Georgia consisted of convicts leased from the State government. An act of the legislature prohibiting further leasing of convicts to industrial enterprises caused the gradual withdrawal from the coal mines of this labor as contracts expired, and operators in the somewhat isolated region where the mines are located were not at once able to supply the deficiency by free labor. The influence of free labor on the efficiency record is shown by the fact that in 1907, when the principal labor was performed by convicts, it required 808 men working an average of 262 days to produce 362,401 tons, an average of 449 tons per mine for the year and of 1.71 tons for each working day. In 1913, with 500 men working 261 days, 255,626 tons were produced, the averages per man being 511 tons for the year and 1.95 tons a day.

Georgia ranks second among all the States in 1913 in the production of barytes, bauxite, fuller's earth, natural mineral paints, and paper clay, and was the only State reporting a production of asbestos. It ranks third among the Southern States and twelfth among all the States in the value of its clay products, which consist chiefly of common brick, front brick, and sewer pipe. The manufactures of clay products were valued at $2,692,619 in 1913, compared with $2,806,541 in 1912. The quarry products consist chiefly of granite and marble. Georgia granites have a high reputation for building purposes, and its marbles are highly prized for their structural and decorative qualities. The total value of the mineral products of Georgia in 1913 was $6,525,792, compared with $6,306,140 in 1912. In addition to the minerals mentioned above the State produces ocher, Portland cement, iron ore, sand, mineral waters, sand-lime brick, slate, salt, talc, and tripoli.

FINANCE. The report of the State Treasurer for the fiscal year ending Dec. 31, 1913, shows a balance at the beginning of the year of $1,113,517, receipts for the fiscal year of $6,907,137, and expenditures of $7,281,030, leaving a balance in the treasury on Dec. 31, 1913, of $739,625. The interest-bearing debt of the State on Dec. 31, 1913, was $6,630,702. Of this amount bonds, constituting the bonded debt of the State and amounting to $3,679,000, will mature in 1915. Most of the bonded debt was incurred originally to aid in the building of railroads and to redeem railroad bonds indorsed by the State.

TRANSPORTATION. The total mileage of single-track road in the State on June 30, 1913, was 7295. There were in addition 98 miles of double track and 1967 miles of track and sidings. The roads having the longest mileage are the Central of Georgia, 1330; the Southern Railway, 909; the Seaboard Air Line, 744; and the Atlantic Coast Line, 707.

EDUCATION. The total number of persons of school age in the State in 1913 was 795,484. The total average enrollment in that year was 590,808, and the average daily attendance was 380,750. The total number of schools was 8268, with 15,209 teachers. There were 6898 schoolhouses. Of the total number of schools, 4998 were for white pupils and 3186 for colored. In schools for white children the teachers numbered 8743 and for colored 4031. The total enrollment in the white schools was 360,554 and in schools for colored 230,254. The average monthly salary paid to white male teachers in the county systems was $69.96 and to female teachers in these systems $47.10. The average monthly salary paid to colored male teachers in the county systems was $28.40 and to colored female teachers $22.11. In the special systems the average monthly salary paid to white male teachers was $140 and to female white teachers $58.92. In these systems there were paid to colored male teachers $56.50, and to colored female teachers $30. The total funds raised for common schools in 1913 amounted to $5,584,333.

POLITICS AND GOVERNMENT. The State Legislature met in 1914 and the measures passed were almost entirely concerned with matters of local interest. On February 25 Governor Slaton appointed William S. West to take the seat, made vacant in the United States Senate by the death of Senator A. O. Bacon, until the election held to choose Senator Bacon's successor. The latter's death and the expiration of the term of Senator Hoke Smith on March 4, 1915, made it necessary to elect two Senators in 1914. In the primary elections for nomination, Senator Smith was renominated, defeating former Governor Brown; and Thomas W. Hardwick, a Representative in Congress, was nominated for the short term. Mr. Hardwick was opposed for the nomination by former Governor Slaton and several other candidates. In the election held on November 3 Senator Smith and Mr. Hardwick were elected by large majorities. In the same election Nathaniel E. Harris was elected Governor, with practically no opposition.

National attention, on account of the character of the matter involved, was directed to the inquiry of misconduct and mental unsoundness on the part of Judge Emory Speer of the southern district of the State, which was begun in January by a committee of inquiry, appointed by the National House of Representatives. Much evidence was given to show loose methods on the part of Judge Speer in the conduct of his court and it was charged on the bench he had been high-handed, domineering, dictatorial, and untrammeled. Judge Speer filed a reply to these charges on February 22. He denied them in general and in detail. The House committee presented its report on June 23. In this Judge Speer was severely arraigned for misusing his high office, but he was spared an impeachment trial because the committee believed that there was not sufficient evidence of wrong-doing to convict him. The committee requested the House to drop the charges and this was done. Charges made against the administration of the Federal prison in Atlanta resulted in an investigation into the administration of that institution during the year. This resulted in somewhat improved conditions.

*STATE GOVERNMENT UNTIL JULY 1, 1915. Governor, John M. Slaton; Secretary of State, Philip Cook; Treasurer, Wm. J. Speer; Comptroller and ex-officio Commissioner of Insurance, W. A. Wright; Attorney-General, Warren Grice; Adjutant-General, J. Van Holt Nash; Superintendent of Education, M. L. Brittain; Commissioner of Agriculture, J. D. Price—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, Wm. H. Fish; Beverly D. Evans, Presiding Justice; Associate Justices, J. H. Lumpkin, M. W. Beck, Samuel C. Atkinson and H. W. Hill; Clerk, Z. D. Harrison—all Democrats.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	43	183	226
Republicans	1	1	2
Democratic majority	42	182	224

The State representatives in Congress will be found in the article UNITED STATES, section *Congress*.

GEORGIA, UNIVERSITY OF. A university for higher education founded at Athens, Ga., in 1785. There were in all departments of the university in 1914, 632 students. The faculty numbered 68. The productive funds amounted to about $400,000. The university is wholly supported by appropriations from the State Legislature. In the library there are about 50,000 volumes. The president is D. C. Barrow, LL.D.

GERAGHTY, MARTIN JOHN. An American Roman Catholic clergyman, died Sept. 28, 1914. He was born in Carthage, N. Y., in 1867, and received a classical and scientific education at Villanova College, graduating in 1885. In the same year he entered the Augustinian Novitiate. He was ordained a priest in 1890, and for several years after served as pastor in Chestnut Hill, Philadelphia. He was then chosen Master of Novices and Sub-Prior of the Monastery at Villanova, the mother house of the Augustinian Order in America. In 1902 he was appointed Prior Provincial of the order. He was founder of St. Rita Hall at Villanova, and from 1909 until his death was Commissary General over the Italian Augustinian Fathers in Philadelphia.

GERMAN EAST AFRICA. A protectorate of Germany on the Indian Ocean between the East Africa Protectorate and Portuguese East Africa. Estimated area, 995,000 square kilometers (384,170 square miles). It was acquired by the Germans in 1885. The native population is estimated at 7,661,000, and the white population numbered Jan. 1, 1913, 5336.

Many minerals, including gold, iron, copper, lead, coal, and precious stones, are found in the protectorate, and the forests contain many valuable species of timber. The natives cultivate the soil to some extent and raise corn, pulse, and bananas for their own use; they also practice grazing. Products of the German plantations include coffee, cacao, vanilla, tobacco, rubber, sugar, cotton, coconuts, and cardamoms. Imports and exports in 1911 were valued at 45,892,000 and 22,438,000 marks respectively; in 1912, 50,309,000 and 31,413,000; in 1913, 53,400,000 and 35,500,000. Imports from and exports to Germany in 1912 amounted to 25,819,000 and 17,827,000 marks. The rubber export in 1912 was valued at 8,426,000 marks; sisal, 7,359,000; hides and skins, 4,067,000. Vessels entered in the 1912 trade, 1034, of 1,913,743 tons. The Usambara Railway from Tanga to Muhesa, a distance of 218 miles, is in operation, and the Central Railway from Dar-es-Salaam to Ujiji was completed in February, 1914; a total length of 743 miles. The Cape to Cairo Railway during 1914 naturally was quiescent. As the line as projected passed through parts of German territory, this blocked the construction, and the English interests were hoping that one result of the war would be to eliminate this obstruction. The budget for 1913–14 balanced at 54,755,315 marks. The administrative headquarters is Dar-es-Salaam. The Governor in 1914 was Dr. Schnee, appointed July, 1912.

In the course of the WAR OF THE NATIONS (q.v.), a British steamer shelled the German town of Langenburg, on Lake Nyasa, and landed a force to take possession of the place, September 1. Late in November the British government was compelled to admit that a British expedition sent to attack German East Africa had been defeated on November 4 with a loss of 795 killed and wounded. At the end of December the British warships *Goliath* and *Fox* bombarded the important coast town and railway terminal of Dar-es-Salaam.

GERMAN EVANGELICAL SYNOD OF NORTH AMERICA. There were in this denomination in 1914, 261,488 communicants, 1345 churches, and 1051 ministers. The denomination is strongest in the Central and North Central States, although nearly all the States of the Union have communicants. The church property is valued at about $1,400,000, and each year over $1,000,000 is spent for the maintenance of churches. The denomination maintains missionaries in India, where there are about 4000 adherents. Papers are published in St. Louis, and a college is maintained at Elmherst, Ill., with a theological seminary at St. Louis. There are charitable institutions for orphans, superannuated ministers, and the widows and orphans of deceased ministers.

GERMANIC PHILOLOGY. See PHILOLOGY, MODERN.

GERMAN LITERATURE. Looking back upon the spirit of German literature during the year 1913 one is tempted to consider it as something like a historical prelude to the war which broke out in the summer of 1914. For the centenary of the Wars of Liberation had struck a note of patriotism which found ready response in drama, fiction, and poetry, and exerted its influence far into the following year. Dwelling upon recollections of their forefathers' struggles with the Napoleonic peril, German poets became loquacious and there was no end of books directly or indirectly inspired by the historical events which a hundred years ago reconstructed the map of Europe. Patriotism is infectious and largely a matter of crowd psychology. That the literature called forth by this sentiment with few exceptions lacked genuine artistic quality did not limit its emotional appeal. There can be little doubt that it served to prepare the mood of the people when the summer of 1914 fanned this reminiscent patriotism into a living and timely force and brought it to a lyrical climax. For to burst into lyric verse seems to the poetic temperament of the German curiously dependent upon some solemn or festive occasion. To this high tide of national pride and patriotic zeal is due the flood of lyrical pathos in the periodical literature of the time. That drama and fiction, which need a certain amount of deliberation and perspective, will before long reflect the same spirit, there is no doubt. In the meanwhile the quantity of literary production has perceptibly diminished; nor can it be denied that the output for the whole year has been even more lacking in works likely to stand the test of time than that of its recent predecessors. In no department of literature does any one supreme effort promise to occupy a permanent place.

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* New governor takes office July 1, 1915.

DRAMA. The most remarkable work that has come from German dramatists during this year is Carl Hauptmann's *Krieg—ein Tedeum*. It is a powerful poetic drama which undoubtedly owed its inception to memories of 1813, but the action is removed from any definite time and place and in the light of the war which broke out shortly after its publication, it partakes of the character of a prophecy full of subtle symbolism. It conjures before the reader a panorama of diplomatic games, domestic tragedies, the social upheaval, and the gruesome aftermath of war. With the exception of this work which the lamented Bertha von Suttner acclaimed shortly before her death, the dramatic output of the year has been rather insignificant. Hermann Sudermann's *Lobgesänge des Claudian* has had that measure of success which German audiences never deny an author of his reputation. Ludwig Fulda's *Rückkehr zur Natur* owes its reception to the same sentiment and to its light calibre. Alexander von Gleichen-Russwurm, a direct descendant of Schiller, who has for many years been identified with essays and treatises on æsthetic problems and social customs, made his entrance in the world of drama with a three-act play entitled *Die Tragödie der Schönheit*. Hermann Bahr, the prolific and clever Austrian, who seems to be the only German playwright popular with American audiences, has scored a success with *Das Phantom*. His compatriot, Karl Schönherr, has so far been unable to repeat the profound impression made a few seasons ago by his powerful drama *Glaube und Heimat*, although his new work, *Die Trenkwalder*, is characterized by the same wholesome and virile spirit. Ernst Hardt who shared with Schönherr the Schiller prize of 1908 continues to work in the neo-romantic manner, his new work being *Schirin und Gertraude*. Georg Hirschfeld is one of the most pathetic figures in the ranks of Young Germany. Hailed in the nineties as a possible rival of Gerhart Hauptmann, he has met with failure after failure and periodically drops out of sight, only to return and court once more a theatrical success. His latest efforts are a three-act comedy, *Rösickes Geist* and the drama *Ueberwinder*. Frank Wedekind, the most puzzling personality among Germany's dramatists, has succeeded in his *Simson* to give the well-worn story of Samson and Delilah a new interpretation. Hans Müller, a Viennese writer who has not a little in common with Wedekind, though he may lack his seriousness, has attracted attention by a comedy in three acts: *Der reizende Adrian*. Hermann Anders Krüger, novelist and critic, has added to the year's dramatic output a three-act comedy: *Die Pelzmütze*. The character of the famous German Ananias, Baron Münchhausen, has been employed by Friedrich Lienhard as the central figure of his comedy of that name. Lienhard has also written: *Odysseus auf Ithaka*. That it is impossible for German authors to represent American life in drama or fiction without a touch of caricature is proved anew by Otto Soyka's otherwise clever comedy *Geldzauber*, which exploits the fiction so popular in Germany, that money is almighty in America. Ludwig Thoma's realistic plays of peasant or middleclass life in Germany are irresistible in their appeal. His new comedy, *Die Sippe*, treats a domestic problem of frequent occurrence more seriously than is his custom and in a new social milieu. Roda-Roda and Gustav Meyrink have collaborated on a two-act play, *Die Uhr*. One-act plays are very popular; they seem to be the fit medium for clever commentators of society like Oskar H. Schmitz who publishes five of these playlets under the title *Don Juan und die Kurtisane*. Still there is no lack of plays that seem to follow the classical tradition. Not a few of them are historical, among them Herbert Alberti's *Agrippina*, Otto Manz's *Die Berufung des Tiberius*, Fritz von Unruh's *Prinz Louis Ferdinand von Preussen* and an ambitious *Kaiser Otto der Dritte* by Alberta von Puttkammer, an unusually gifted woman whose literary reputation so far had rested upon her admirable *Balladen*. Paul Ernst's *Manfred und Beatrice*, Hanna Rademacher's *Golo und Genovefa*, Emil August Glogau's *Hagar*, and Albert Geiger's dramatic legend *Sun* also belong to this group. What a great part the moving-picture theatre plays in Germany is proved by the appearance of a collection of plays, *Das Kinobuch*, which contains contributions by Elsa Lasker-Schüler, Elsa Asenijeff, and others, and by the number of books in which the "Kino" is made the subject of æsthetic, critical, and even sociological comment.

FICTION. The fiction of 1914 is even more lacking in works that have an element of greatness than the drama of the year. But the production is enormous and there is such an abundance of talent, that the proportion of works challenging attention by some individual interesting feature is remarkable. Not a few stories of the year owe their inception to the keynote of 1813. Walter Bloem, who is developing into an appallingly prolific writer, has published a new historical novel, *1813–14—Geschichte eines jungen Freiheitshelden*. Franz Adam Beyerlein, the author of *Jena oder Sedan?* and *Der Zapfenstreich* (Taps), has contributed to the literature of the Wars of Liberation *Das Jahr des Erwachens*, and August Sperl, *Burschen heraus*. Other novels with a historical background are *Die trennende Brücke*, a Viennese story by Julius von Ludassy; *Wenn Götter lieben* by the indefatigable Richard Voss; and *Mutter Venedig* by Wilhelm Fischer-Graz, whose work has always an individual charm. Adam Müller-Guttenbrunn, long identified with the literature of the Teuton-Slav conflict which disturbed the peace of Austria and recently of all Europe, has written a book of fiction with the suggestive title *Deutscher Kampf*. Walter von Molo, who has set out to treat the life of Schiller in a series of novels, has written a new volume entitled *Die Freiheit*. The novel which takes its cue from biography and traces the whole development of a human soul seems more and more to engage the attention of the more serious authors. Enrica Händel-Mazetti, who some years ago scored a great success with her story of the Thirty Years' War, *Die arme Margret*, has published the second volume of her novel of Styrian life: *Stephana Schwertner*. A name challenging general attention, Max Nordau, appears on the title-page of a novel called *Doktor Kohn—ein Lebenskampf*. Elisabeth von Heyking, who some years ago had such an astonishing success with her *Letters that never Reached Him*, continues to exploit her experiences as a diplomat's wife in her fiction; her latest work is a Chinese story, *Tschun*. As an interpreter of present-day problems Max Ludwig has become a force to be reckoned with in German fiction. In his last book, *Der Sieger*, he forecasts a conflict which has some analogies with the cataclysm which has since followed. In the psychology of an effete nobility E. von Keyserling is unparalleled, and his style is of such a rare quality that his new story, *Abendliche Häuser*, is a little masterpiece. Compared with his novels those of Georg von der Gabelentz and Georg von Ompteda, treating the same social class, seem to be written from the outside. But a new writer, Wilhelm Speyer, sees that world through the eyes of a critic of human society, and his novel, *Das fürstliche Haus Heerfurth*, deserves a place by itself. New novels by Otto Gysae, *Die Leidenden;* Alexander Castell, *Büsser der Leidenschaft;* Adolf Köster, *Die bange Nacht;* Hans Heinrich Ehrler, *Die Reise ins Pfarrhaus;* and A. Von Vestenhof, *Der Mann mit den drei Augen*, give evidence of their authors' concern with psychological and spiritual conflicts, the last story excepted, which in its grotesque fancy suggests the influence of Poe. Of the group once known as Young Germany, not a few members have published new works: Hermann Hesse, *Rosshalde;* Georg Hirschfeld, *Die Belowsche Ecke* and *Die deutsche Prinzessin;* Hans Land, *Alfred von Ingelsheims Lebensdrama;* Felix Holländer, *Frau Ellin Rote;* and Paul Scheerbart, the master of whimsical moods and strange fancies, calls his story: *Das graue Tuch und zehn Prozent Weiss-ein Damenroman*. Wilhelm Hegeler, who is of the same generation, but never shared its idiosyncrasies, has given a new proof of his ripe and well-balanced art in *Die Leidenschaft des Hofrat Horn*. René Schickelé, the Alsatian, has written *Benkal, der Frauentröster;* and Paul Leppin, the Austrian poet, appears as author of what he calls a ghost story of Prague, *Severins Gang in die Finsterniss*. Among the numerous novels by women authors the year has seen the publication of two novels by the author of *The Department Store*, Margarete Böhme, *Anna Nissens Traum* and *Sarah von Lindholm;* Helene Mühlau's *Die zweite Generation;* Emmi Elert's *Heimat Landstrasse;* and others by Olga Wohlbrück, Charlotte Niese, Maria Janitzschek, Hans von Kahlenberg, which is the pseudonym of a prolific writer of rather questionable stories, and others.

The short story is gaining in favor. Unusually great is the number of *Novellen* and *Erzählungen* coming from the Austrian book market; it seems to indicate that this form of fiction appeals particularly strongly to the temperament of the Austrian. The list contains Marie Eugenie delle Grazie's new volume, *Das Buch des Lebens;* Gisela von Berger's *Königskind Seele;* Adam Müller-Guttenbrunn's *Sommerbuch;* Wilhelm Fischer-Graz's *Alltagszauber;* Arthur Schnitzler's *Die griechische Tänzerin;* Arthur Holitscher's *Geschichten zweier Welten;* Emil Ertl's *Drei Novellen;* Felix Salten's *Der Schrei der Liebe;* Richard Schaukal's *Zettelkasten eines Zeitgenossen;* and Rudolf Greinz's humorous tales, *Die Schellenkappe*. Two Swiss writers have published new books of stories, Alfred Huggenberger, *Bauernland*, and Meinrad Lienert, *Bergdorfgeschichten*. Bernd Isemann, an Alsatian who made a promising début a few years ago, has published two stories, *Maria im Tempel*, and *Der Musikantenstreich*. Heinrich Spiero, the poet and critic, also appears as author of two *Novellen*, *Adalbert Kalweit*, and *Das Manuskript*. Ludwig Thoma's *Nachbarsleute* is in his usual humorous vein. A posthumous book by Anton von Perfall is entitled *Meine letzten Waidmannsfreuden*, and will appeal to the lover of hunting. Heinrich Lhotzky's *Geschichten aus dem Weiherthal* derive special interest because the title adds that they were told after Japanese pictures. That Alfons Paquet's *Erzählungen an Bord* have touches of exotic flavor can be expected from an author who has traveled so widely. A book by Anna Croissant-Rust, the Munich writer, bears the title *Der Tod*, and the seventeen sketches which it contains have been illustrated by as many drawings by Willi Geiger. Carl Hauptmann's *Schicksale* is one of the most noteworthy volumes of the year, dealing with the curious characters which the author delineates with so much understanding and sympathy. There have also been books of short stories by Wilhelm Wolters and Timm Kröger, and a volume of clever sketches by Else Lasker-Schüler.

POETRY. The lyrical production of the year has been great, but devoid of any new, striking physiognomies. What was once a group of ardent young souls, the young generation of the nineties, singing of new ideals of life and art, now in its maturity still sings, but the tunes are very much on the order of that view of life and art which twenty years ago they had set out to revise. The fiftieth birthday of Karl Henckell was duly solemnized by the publication of a little book, *Hundert Gedichte*, selected by himself. Max Dauthendey, too, has a volume of selected verse to his credit. Gustav Falke's new verse, *Anna*, gives little evidence of growth. Christian Morgenstern's last verse was entitled *Wir fanden einen Pfad*. Elsa Asenijeff, who belongs to the same generation, has written a novel in lyrics, entitled *Hohelied an den Ungenannten*. Poets not immediately connected with that group of writers are Georg Busse, whose new poems are published under the title *Zwischen Himmel und Hölle;* Stefan George, whose book, *Der Stern des Bundes*, reflects the abstract beauty and dignity which seem a part of his individuality; Hans Bethge, who in *Die indische Harfe* offers echoes of Hindoo song; Rudolf Presber, whose book, *Zwischen zwei Seelen*, is the expression of a sincere, though not very striking personality; Gustav Schüler who presents two books of verse, one called *Balladen und Bilder;* and Benno Geiger whose collected poems have been published. A posthumous volume of verse by Gerard Ouckama Knoop is a pathetic reminder of a name that one misses with regret among current publications. The Swiss critic and poet, Adolf Frey, and the Alsatian René Schickelé, have published volumes of verse. Anton Wildgans, an Austrian poet, strikes a timely war note in the volume entitled *Vae Victis.* One of the recent newcomers of promise, Paul Zech, calls his new book of verse *Die eiserne Brücke.* Some new arrivals in the lyrical field are Marte Sorge with a book of lyrics on woman, *Frauenlieder;* Gottfried Kölwel with a volume of *Gesänge gegen den Tod;* and Paul Boldt, whose *Junge Pferde! Junge Pferde!* is a title that contrasts strangely with the conventional sonnet prevailing within the pages of the book. It is easy, however, to associate the erratic personality of Erich Mühsam with a volume of verse called *Wüste, Krater, Wolken.* The latest lyrical publications of the year have taken the form of paper covered booklets in which the verse called forth by the war is collected and sent to the men at the front; *Der heilige Krieg* is the title of one of those collections, and it is painful for the neutral onlooker to find among the singers of the most strident war cries, the names of many comparatively young radicals who a decade or two ago had little or no sympathy for militarism and its manifestations.

BIOGRAPHY, LETTERS, AND MEMOIRS. One of the most important biographical works published during the year is Dr. Ludwig Schemann's *Gobineau* and a volume of supplementary notes on the life and work of the great French scholar. Richard Wagner, too, continues to be the subject of biographical research, and the latest volume which has been added to Wagner literature is Hans Bélart's *Richard Wagner's Beziehungen zu François und Maria Wille.* Another valuable contribution to biography is Elizabeth Förster-Nietzsche's *Der einsame Nietzsche.* A biography of Lenau has been written by Anton X. Schurz; of Theodor Körner by Walter Jacobi; of the Tyrolese poet, Karl Domanig, by Anton Dorrer; of Theodor Herzl, the Zionist, by Adolf Friedmann; of Johanna Schopenhauer by Laura Frost; of Wilhelm Jensen by Dr. Otto Fraass; of Ernst von Wildenbruch by Berthold Litzmann; and the Low German poet, John Brinckmann, is the subject of two biographies, one by Wilhelm Schmidt, the other by Otto Waltzin. A place by itself belongs to Max Wundt's *Platons Leben und Werk.* Other biographical works are Dr. Richard Fenger's *Kleist's Geheimniss;* Heinrich Conrad's *Napoleons Leben auf St. Helena;* Hermann von Egloffstein's *Carl August während des Krieges von 1813;* Leopold Matzon's *Der junge Rückert;* Johannes Meissner's *Jung Shakespeare;* Adolf Vögtlin's volume of Gottfried Keller anecdotes; and August Steiger's book on Keller's mother; Wilhelm Hertz's biography of Bernhard Crespel, the friend of Goethe's youth, etc.

Musical biography received important additions in R. Hohenemser's *Luigi Cherubini*, and in Albert Leitzmann's two books on Mozart and Beethoven in the light of their contemporaries. Autobiographical volumes of varied interest are J. F. Castelli, *Memoiren meines Lebens;* Rosa Sucher's *Aus meinem Leben;* Georg Forster's *Tagebücher*, and the charming volume of recollections of his childhood by the Swiss poet, Carl Spitteler, *Meine frühesten Erlebnisse.* Many volumes of letters have been published during the year: two editions of those of Hebbel, and two of Heine, a selection of the letters of Dorothea and Caroline Schlegel, and a volume of the letters of Maria Theresa. An interesting book by Anton Bettelheim is entitled, *Biographenwege.*

HISTORY. Great interest is shown in Ricarda Huch's history of the Thirty Years' War, of which the third volume embraces the period 1635–50. A work which suggests comparisons between Germany then and now is, *1848—der Vorkampf deutscher Einheit und Freiheit*, compiled by Dr. Tim Klein from documents. Eberhard Bücher has written *Die französische Revolution;* and H. P. Gerken offers a contribution to Napoleonic literature, *Der Sturz Napoleons.* Dr. Hermann Oncken has published two volumes of *Historisch-politische Aufsätze.*

CRITICISM, ESSAYS, ESTHETIC AND PHILOSOPHICAL. To survey the vast amount of books written by German authors on other authors, living or dead, native or foreign, and to separate the wheat from the chaff, is a difficult task. The year has added some more volumes of critical research and interpretative comment to the already voluminous Goethe and Schiller literature: Theobald Ziegler's *Goethes Welt-und Lebensanschauung;* Emil Schaeffer's *Goethes aeussere Erscheinung;* Dr. Carl Horn's *Goethe als Energetiker;* Fritz Berresheim's book on Schiller as an editor; and Franz Schnaass's *Schiller als Dramatiker.* Shakespeare rivals the two German classicists in the attention bestowed upon him, as is proved by Prof. Gustav Wolf's *Der Fall Hamlet;* Jacob Overmann's *William Shakspeare und Robert Southwell;* Friedrich Gundolf's *Shakspeare und der deutsche Geist;* Johann E. Schmidt's *Shakspeares Dramen und sein Schauspielerberuf;* and Meinrad Haberl's *Die Entstehung des optischen und akustischen Sinnes bei Shakspeare.* Dr. Adolf Köster's *Der junge Kant im Kampfe um die Geschichte;* and Friedrich Gogarten's *Fichte als religiöser Denker* are full of suggestion. Dr. Adolf Kohut has compiled a volume of selections entitled *Christoph Martin Wieland als Dichter und Weltweiser.* The romantic school is the subject of books by Julius Bab and Dr. Rudolf Haym. Hebbel literature has been enriched by at least one volume: Dr. Karl Herke's *Hebbels Theorie und Kritik poetischer Muster.* Nietzsche enters into the speculations of three authors: Benedict Lachmann's *Protagoras, Nietzsche, Stirner;* Friedrich Lienhard's *Parsifal und Zarathustra;* and Otto Ernst's *Nietzsche der falsche Prophet.* Among the many books devoted to the drama and allied subjects are Otto Brahm's and Alfred von Berger's posthumous volumes of critical studies; Monty Jacobs's *Deutsche Schauspielkunst;* Ernst L. Stahl's work on the English stage of the nineteenth century; Friedrich Kaussler's *Schauspielernotizen;* Ludwig Barnay's *Ueber Theater und Anderes*, etc. Among the books of essays Franz Blei's *Landfahrer und Abenteurer;* Emil Ludwig's *Der Künstler*, Fritz Mauthner's *Gespräche im Himmel*, and Kurt Martens's *Geschmack und Bildung* are the most noteworthy. There has been the usual abundance of books devoted to critical and uncritical appreciation of the younger German authors, among them Gerhart Hauptmann, Richard Dehmel, Arthur Schnitzler, Ernst Hardt, Ricarda Huch, Cäsar Flaischlen, and others. There has also come a volume from Dr. Rudolf Eucken, *Zur Sammlung der Geister;* and one by Walter Rathenau, *Zur Mechanik des Geistes.*

LITERATURE AND LANGUAGE. From literary historians have come some books of value to the student: Richard M. Meyer's *Die Weltliteratur in 20. Jahrhundert;* Dr. Julius Petersen's *Literaturgeschichte als Wissenschaft;* Karl Vossler's *Die italienische Literatur der Gegenwart;* Dr. Wilhelm Friedmann's, *Die französische Literatur im 20. Jahrhundert;* and Hermann Anders Krüger's *Deutsches Literatur-lexikon.* Interesting anthologies are *Das Bayernbuch* and *Der deutsche Psalter.* A valuable book of reference is Dr. Friedrich Kluge's *Etymologisches Wörterbuch der deutschen Sprache.*

MISCELLANEOUS WRITINGS. An interesting undertaking by a German publishing house is entitled *Die schönsten Märchen der Weltliteratur,* and has so far brought out volumes of Low German, Norse, Russian, and Greek tales. Among the numerous books of travel are Laurids Bruun's *Vom Bosporus bis zu van Zanten's Insel;* Richard A. Bermann's *Irland;* Albert H. Rausch's *Südliche Reise;* Egon von Kapherr's *Drei Jahre in Sibirien als Forscher und Jäger;* and an attractive annual *Deutsch-Nordisches Jahrbuch 1914* devoted to Scandinavia. Of intimate historical interest is Emil Hofmann's *Wiener Wahrzeichen.* Dr. A. P. Clasen's *Der Salutismus* is a historical and sociological survey of the work of the Salvation Army. Eberhard Zschimmer's attempt at interpreting our technical age in *Zur Philosophie der Technik* is commendable. A noteworthy contribution to feminist literature is Grete Meisel-Hess's *Betrachtungen zur Frauenfrage.* The problem of physical culture and modern dancing has been exhaustively treated by Dr. Fritz Winther in *Körperbildung als Kunst und Pflicht.*

NEW EDITIONS. There has been no decrease in new editions of Goethe and Schiller. Other poets so distinguished are Heinrich von Kleist, Hölderlin, Grillparzer, Hoffmann von Fallersleben, and Wilhelm Raabe.

NECROLOGY. The dead of the year include Heinrich Eduard Brockhaus of the publishing firm in Leipzig; Rudolf Genée, dramatist and critic; Heinrich Zeise and Christian Morgenstern, lyric poets; Dr. Julius Rodenberg, the veteran editor of *Die Rundschau;* Dr. Karl Frenzel, the novelist; Otto Henne am Rhyn, the historian; Fritz Marti, the Swiss writer; Dr. Otto Harnack, Paul Heyse, and Bertha von Suttner.

GERMAN NEW GUINEA. A German protectorate, including Kaiser-Wilhelmsland and the Bismarck Archipelago. Estimated area, 240,000 square kilometers (92,664 square miles). The native population, with dependencies, is estimated at 602,000; whites in German New Guinea, Jan. 1, 1913, numbered 968, and in the dependencies, 459. The Germans acquired the protectorate in 1899. The capital is Rabaul. The dependencies are the Caroline, Palau, Mariana, and Marshall groups of islands. Imports and exports of German New Guinea in 1911, 5,299,000 and 4,109,000 marks respectively; in 1912, 5,872,000 and 5,041,000. Imports and exports of the East Carolines and the Marshall Islands in 1911, 1,729,000 and 6,271,000 marks; in 1912, 1,963,000 and 5,164,000. Imports and exports of the West Carolines, together with the Palau and Mariana groups, in 1911, 987,000 and 1,646,000 marks; in 1912, 1,372,000 and 1,882,000. Vessels entered in the 1911 trade, 717, of 468,000 tons. The budget for 1913–14 balanced at 3,413,997 marks. Estimated revenue and expenditure 1913, 3,410,000 marks, including 1,650,000 marks imperial subvention. Dr. Hahl was Governor in 1914. On Sept. 11, 1914, an expeditionary force of British Australians captured the town of Herbertshöhe, the seat of government for Kaiser-Wilhelmsland, the Bismarck Archipelago, and the German Solomon Islands, killing a score or more Germans, and occupying the colony for the British Empire. On September 25 the Australians also took possession of Friedrich-Wilhelmshafen. Consult the article on the WAR OF THE NATIONS.

GERMAN REFORMED CHURCH. See REFORMED CHURCH IN THE UNITED STATES.

GERMAN SAMOA. A protectorate of Germany in the southern Pacific, composed of the islands of Savii (652.9 square miles), Upolu (335.5), Manono, (3.3), and Apolim (1.8)—a total of 993.5 square miles. The estimated native population, 38,000; whites, Jan. 1, 1913, 544. The staple product is copra. Imports and exports in 1911, 4,066,000 and 4,390,000 marks respectively; in 1912, 4,994,000 and 5,045,000. The copra export in 1911 was valued at 3,583,000 marks, and in 1912 at 4,070,000; cacao, 770,000 and 840,000. There entered in the 1912 trade, 65 vessels, of 74,430 tons, exclusive of coasters and warships. The budget balanced (1913–14) at 1,132,804 marks. The administrative headquarters is Apia (Upolu). Dr. Schultz was Governor in 1914. An expeditionary force from New Zealand took possession of German Samoa on August 29, occupying the colony in the name of Great Britain, and sending the German Governor and officials to the Fiji Islands. Consult the article on the WAR OF THE NATIONS.

GERMAN SOUTHWEST AFRICA. A protectorate of Germany on the Atlantic, lying between Angola and the Cape Province (excepting Walfish Bay, which belongs to the Cape Province). Estimated area, 835,100 square kilometers (322,432 square miles). The native population is estimated at 84,000, and the white inhabitants numbered, Jan. 1, 1913, 14,830. The Germans acquired the protectorate in 1884, but have always met with vigorous resistance from the natives, especially the Hottentots and Damaras. The most important industry is stock raising, the number of animals in 1913 including 205,643 cattle, 17,171 Persian sheep, 53,691 wool sheep, 472,585 mutton sheep, 11,191 karakul, 485,481 goats, 31,503 angora goats, 15,916 horses, 13,618 asses and mules, 7772 swine, 709 camels, and 1507 ostriches. The output of the diamond mines in 1910–11 totaled 814,322 carats; 1911–12, 766,465 carats. Imports and exports in 1911 were valued at 45,302,000 and 28,573,000 marks respectively; in 1912, 32,499,000 and 39,035,000. Diamond export in 1911 and 1912, 23,034,000 and 30,414,000 marks respectively; copper, 3,754,000 and 6,523,000; lead, 346,000 and 228,000; skins, 246,000 and 298,000; ostrich plumes, 80,000 and 97,000; wool, 74,000 and 150,000; sealskins, 44,000 and 42,000. Imports from and exports to Germany in 1912 were valued at 26,442,000 and 32,454,000 marks respectively. Vessels entered in the 1912 trade, 430, of 1,417,230 tons. There are railway lines from Swakopmund to Windhuk (237 miles), from Swakopmund to Tsumeb (359 miles), and from Otavi to Grootfontein. The line from Lüderitzbucht to Keetmanshoop was completed in July, 1908. The State has bought the Otavi and Otavi-Grootfontein lines, leasing the latter to the Southwest Africa Company for 30 years. The total length of all railways in operation is officially given at 2104 kilometers at the end of 1913. The principal line of railway in German Southwest Africa was of 3-foot, 6-inch gauge, running from Swakopmund inland via Karibib to a point about 180 miles from the coast, where it turns southward and goes via Windhuk and Keetmanshoop to Seeheim, where it bends coastward, terminating at Luderitzbucht. From Seeheim there is a branch southward to Warmbad. The total length of the line from Swakopmund to Luderitzbucht was 790 miles, and of the branch line from Seeheim to Warmbad, 139 miles. There is also a narrow gauge (2-foot) line from Swakopmund to Tsumeb, 370 miles, with a branch from Otavi to Groofontein. The various distances are as follows: Luderitzbucht to Warmbad, 338 miles; Luderitzbucht to Windhuk, 545 miles; Swakopmund to Karibib, 125 miles; Swakopmund to Windhuk, 244 miles, and Warmbad to Windhuk, 484 miles. At the end of the year much interest was being manifested in the effect of the great European War on the railway map of Africa, as Germany was spending vast sums on the development of railway schemes in her African colonies, and had constructed a number of lines of commercial, military, and strategic importance. Up to 1914 none of these had been productive, and, while future profits could reasonably be expected, yet the outcome, in the event of their being taken by other countries, was a matter of considerable speculation, inasmuch as the German colonies were sandwiched in between those of Great Britain, France, Portugal, and Italy. The budget for 1913–14 balanced at 54,141,672 marks, including 14,626,840 marks imperial subvention. The estimate for 1913–14 was 54,140,000 marks, including 48,260,000 marks imperial subvention. Windhuk is the administrative headquarters. Dr. Seitz was Governor in 1914. Luderitz Bay, in the southern part of German Southwest Africa, was occupied on September 19 by forces from the neighboring British colony of South Africa. Consult the article on the WAR OF THE NATIONS.

GERMANY. The German Empire, a constitutional monarchy, consists of twenty-five federated States and an Imperial Territory (Reichsland). The capital is Berlin.

AREA AND POPULATION. The area of the empire is officially stated at 540,857.6 square kilometers, equivalent to 208,825.2 square miles. It is of interest to note that this area is only slightly greater than that of France, 207,129 square miles, and is about the same as the combined areas of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, Pennsylvania, New Jersey, and Kentucky, 208,428 square miles. The area in square miles, and the *de facto* population according to the census of Dec. 1, 1900, and the census of Dec. 1, 1910, are shown by States in the following table (*k* kingdom, *g* grand duchy, *d* duchy, *p* principality, *f c* free city, *r* Reichsland); under Prussia are shown the constituent provinces and territory of Hohenzollern, and under Bavaria are shown Bavaria proper (that is, the eastern part), and the detached Palatinate (west of the Rhine):

	Sq. m.	*Pop. 1900*	*Pop. 1910*
Prussia (*k*)	134,663.9	34,472,509	40,165,219
East Prussia	14,286.5	1,996,626	2,064,175
West Prussia	9,866.7	1,563,658	1,703,471
Berlin (city)	24.5	1,888,848	2,071,257
Brandenburg	15,383.1	3,108,554	4,092,616
Pomerania	11,633.7	1,634,832	1,716,921
Posen	11,193.6	1,887,275	2,099,831
Silesia	15,573.4	4,668,857	5,225,962
Saxony	9,755.7	2,832,616	3,089,275
Schleswig-Holstein	7,343.2	1,387,968	1,621,004
Hanover	14,868.5	2,590,939	2,942,436
Westphalia	7,806.8	3,187,777	4,125,096
Hesse-Nassau	6,062.5	1,897,981	2,221,021
Rhine Province	10,424.8	5,759,798	7,121,140
Hohenzollern	441.0	66,780	71,011
Bavaria (*k*)	29,293.5	6,176,057	6,887,291
Bavaria proper	27,004.7	5,344,379	5,950,206
Palatinate	2,288.8	831,678	937,085
Saxony (*k*)	5,788.8	4,202,216	4,806,661
Württemberg (*k*)	7,531.8	2,169,480	2,437,574
Baden (*g*)	5,818.6	1,867,944	2,142,833
Hesse (*g*)	2,969.5	1,119,893	1,282,051
Mecklenburg-Schwerin (*g*)	5,068.3	607,770	639,958
Saxe-Weimar (*g*)	1,393.8	362,873	417,149
Mecklenburg-Strelitz (*g*)	1,131.1	102,602	106,442
Oldenburg (*g*)	2,482.3	399,180	483,042
Brunswick (*d*)	1,417.8	464,333	494,339
Saxe-Meiningen (*d*)	952.8	250,731	278,762
Saxe-Altenburg (*d*)	511.0	194,914	216,128
Saxe-Coburg-Gotha (*d*)	763.2	229,550	257,177
Anhalt (*d*)	887.8	316,085	331.128
Schwarzburg-Sondershausen (*p*)	332.9	80,898	89,917
Schwarzburg-Rudolstadt (*p*)	363.0	93,059	100,702
Waldeck (*p*)	432.8	57,918	61,707
Reuss Elder Line (*p*)	122.1	68,396	72,769
Reuss Younger Line (*p*)	319.2	139,210	152,752
Schaumburg-Lippe (*p*)	131.4	43,132	46,652
Lippe (*p*)	469.4	138,952	150,937
Lübeck (*fc*)	114.9	96,775	116,599
Bremen (*fc*)	99.0	224,882	299,526
Hamburg (*fc*)	160.0	768,349	1,014,664
Alsace-Lorraine (*r*)	5,606.9	1,719,470	1,874,014
Total	208,825.2	56,367,178	64,925,993

The growth of population on the present territory of the empire is stated as follows: in 1816, 24,833,000; in 1825, 28,113,000; in 1835, 30,938,000; in 1840, 32,787,000; in 1850, 35,397,000; in 1860, 37,747,000; in 1864, 39,392,000; in 1871, 41,058,792; in 1880, 45,234,061; in 1890, 49,428,470; in 1900, 56,367,178; in 1905, 60,641,489; in 1910, 64,925,993. The increase from 1871 to 1880 amounted to about 10.8 per cent; from 1880 to 1890, 8.9; from 1890 to 1900, 13.1; from 1900 to 1910, 14.1; from 1871 to 1910, 58.1. The average density per square mile in 1871 was about 197, and in 1910 about 311.

The estimated population of the empire, and of the Zollgebiet respectively, on June 30, 1912, was 66,146,000 and 66,391,000; on June 30, 1913, 66,981,000 and 67,228,000; on June 30, 1914, 67,812,000 and 68,061,000.

The 1910 census returned 32,040,166 males and 32,885,827 females. The number of males 18 years old and over was 18,947,561, and of females, 19,906,644. In view of the war, it is interesting to note the number of males returned by the 1910 census as having been born between the years 1879 and 1894 inclusive, that is, the number of males who, barring deaths, would have been from 20 to 35 years of age in 1914;

this number was 6,305,901. Of the total population in 1910, unmarried males and unmarried females numbered 19,516,340 and 18,591,604 respectively; married, 11,608,028 and 11,621,685; widowed, 866,676 and 2,583,872; divorced or separated, 49,122 and 88,666.

The 1900 census showed a foreign population of 778,737, of whom 314,463 female; the 1910 census, 1,259,873, of whom 542,879 female. Of the total in 1910, Austrians numbered 634,983, Dutch 144,175, Russians 137,697, Italians 104,204, Swiss 68,257, Hungarians 32,079, Danes 26,233, French 19,140, British 18,319, Americans 17,572, Luxemburgeois 14,356.

The increase in population is largely urban. Communes having less than 2000 inhabitants are regarded as rural. The aggregate population of such communes in 1871 was 63.9 per cent of the total; in 1890, 53.0 per cent; in 1900, 45.6 per cent; in 1910, 40.0 per cent. The aggregate population of communes having 100,000 or more inhabitants in 1871 was 4.8 per cent of the total; in 1890, 12.1; in 1900, 16.2; in 1910, 21.3. At the census of 1910, the empire comprised 75,939 communes, with 64,925,993 inhabitants. Communes with less than 2000 inhabitants numbered 72,199, with a population of 25,954,587. Communes with 2000 or more inhabitants numbered 3740, with a population of 38,971,406. Communes with 2000 to 4999 inhabitants numbered 2441, with a population of 7,297,770; communes with 5000 to 19,999 inhabitants, 1028, with 9,172,333; communes with 20,000 and less than 100,000, 223 with 8,677,955; communes with more than 100,000, 48, with 13,823,348. On Dec. 1, 1910, there were 576 communes with over 10,000 inhabitants each. The communal population of the larger cities, according to the 1910 census, was as follows (some of the figures are larger than the returns of the census, having been adjusted so as to include certain districts annexed subsequent to the census): Berlin, 2,071,257 (Greater Berlin, 3,710,000); Hamburg, 932,116; Leipzig, 626,267; Munich, 607,592; Dresden, 551,697; Cologne, 516,527; Breslau, 514,765; Frankfort on the Main, 414,576; Düsseldorf, 358,728; Nuremberg, 333,142; Charlottenburg, 305,978; Hanover, 302,375; Essen, 294,653; Chemnitz, 287,807; Stuttgart, 286,218; Magdeburg, 279,629; Bremen, 247,437; Königsberg, 245,994; Stettin, 237,419; Neukölln (formerly Rixdorf), 237,289; Duisburg, 229,483; Dortmund, 214,226; Kiel, 211,627; Mannheim, 206,049; Halle, 180,843; Strassburg, 178,891; Berlin-Schöneberg, 172,823; Altona, 172,628; Danzig, 170,337; Elberfeld, 170,195; Gelsenkirchen, 169,513; Barmen, 169,214; Posen, 156,691; Aachen (Aix-la-Chapelle), 156,143; Cassel, 153,196; Brunswick, 143,552; Augsburg, 143,128; Bochum, 136,931; Karlsruhe, 134,313; Lichtenberg, 133,141; Krefeld, 129,406; Erfurt, 123,548; Plauen, 121,272; Mainz, 118,107; Mülheim on the Ruhr, 112,580; Berlin-Wilmersdorf, 109,716; Lübeck, 109,106; Wiesbaden, 109,002; Saarbrücken, 105,089; Mülhausen (in Alsace), 105,448; Hamborn, 101,703.

At the 1900 census, Evangelicals comprised about 62.5 per cent of the population, and Roman Catholics 36.1 per cent; at the 1910 census, 61.6 and 36.7. In 1910, Evangelicals numbered 39,991,421, Roman Catholics 23,821,453, other Christians, 283,946, Jews 615,021, others 214,152. The following table shows, according to the census of Dec. 1, 1910, the number of Evangelicals (*E.*), of Roman Catholics (*R. C.*), of other Christians (*O. C.*), and of Jews (*J.*), per thousand inhabitants:

	E.	*R.C.*	*O.C.*	*J.*
Prussia	618.2	363.1	4.7	10.4
Bavaria	282.1	706.1	2.0	8.0
Saxony	940.5	49.1	5.8	3.7
Württemberg	685.6	303.6	5.8	4.9
Baden	385.6	593.2	6.2	12.1
Hesse	661.5	310.1	5.2	18.8
Mecklenburg-Schwerin	961.8	32.9	2.0	2.2
Saxe-Weimar	944.0	47.9	2.0	3.2
Mecklenburg-Strelitz	953.7	40.0	3.3	2.4
Oldenburg	769.4	222.6	3.3	3.2
Brunswick	939.0	52.4	3.6	3.6
Saxe-Meiningen	973.7	18.8	2.2	4.1
Saxe-Altenburg	961.6	33.5	2.2	0.9
Saxe-Coburg-Gotha	973.9	19.3	1.2	3.0
Anhalt	952.1	38.5	3.3	4.2
Schwarzburg-Sondershausen	976.9	19.3	0.6	2.4
Schwatzburg-Rudolstadt	985.2	12.8	0.8	0.8
Waldeck	936.9	46.3	6.4	9.6
Reuss Older Line	968.7	17.8	11.9	0.6
Reuss Younger Line	964.1	22.9	5.1	2.5
Schaumburg-Lippe	951.4	15.3	28.2	4.9
Lippe	953.8	38.8	1.3	5.2
Lübeck	956.6	34.0	2.4	5.4
Bremen	867.0	74.2	4.3	6.2
Hamburg	916.3	50.3	4.2	19.2
Alsace-Lorraine	217.8	762.2	2.1	16.3
Total	615.9	366.9	4.4	9.5

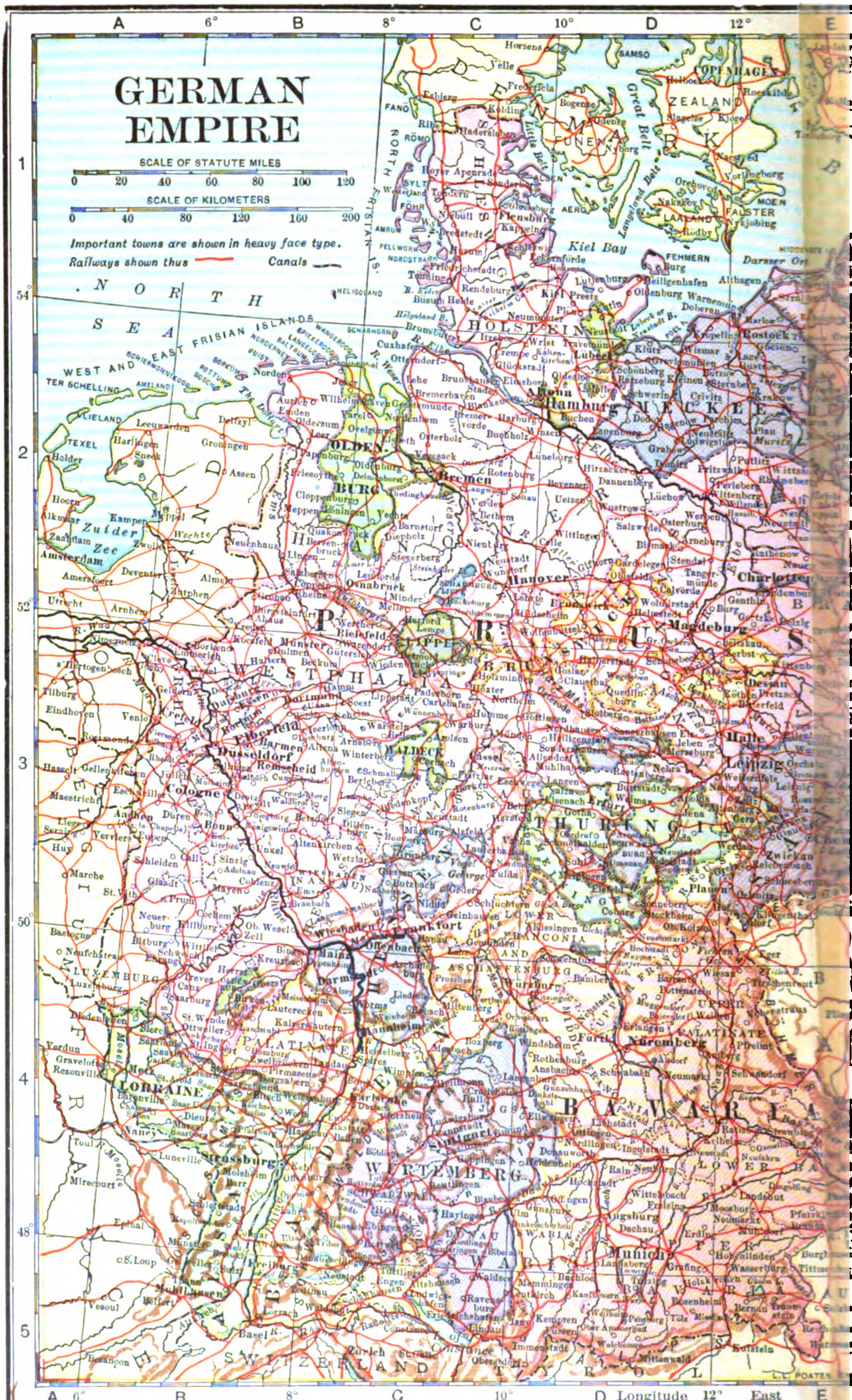
In 1911 and 1912 respectively, marriages numbered 512,819 and 523,491; births (including stillbirths), 1,927,039 and 1,925,883; deaths (including stillbirths), 1,187,094 and 1,085,996; excess of births, 739,945 and 839,887; living births, 1,870,729 and 1,869,636. The following table shows for each 1000 inhabitants: *m* the number of marriages; *b* births (including stillbirths); *d* deaths (including stillbirths); *e* excess of births over deaths; *l* living births; and for each 100 births; *i* the number of illegitimate births; *s* the number of stillbirths:

	m	*b*	*d*	*e*	*l*	*i*	*s*
*1871-80	8.6	40.7	28.8	11.9	39.1	8.9	4.0
1881-90	7.8	38.2	26.5	11.7	36.8	9.3	3.7
1891-1900	8.2	37.3	23.5	13.9	36.1	9.1	3.2
1901-1910	8.0	33.9	19.7	14.3	32.9	8.6	3.0
1900	8.5	36.8	23.2	13.6	35.6	8.7	3.1
1905	8.1	34.0	20.8	13.2	33.0	8.5	3.0
1910	7.7	30.7	17.1	13.6	29.8	9.1	2.9
1911	7.8	29.5	18.2	11.3	28.6	9.2	2.9
1912	7.9	29.1	16.4	12.7	28.3	9.5	2.9

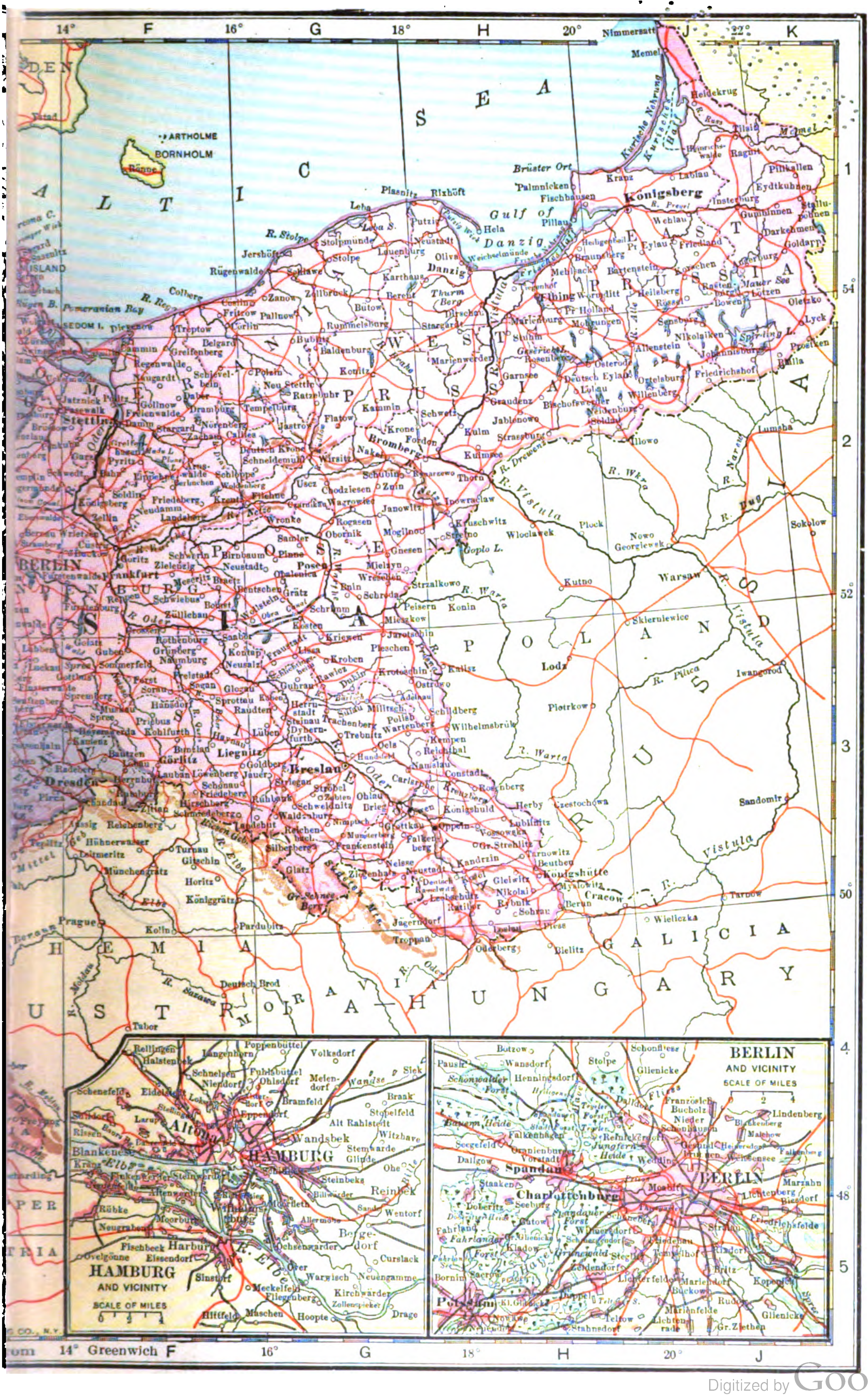
* For the ten-year periods, the annual average is shown.

German oversea emigrants in 1900 numbered 22,309, and foreign emigrants from German ports, 160,129; in 1905, 28,075 and 284,787; in 1910, 25,531 and 254,618; in 1911, 22,690 and 183,233; in 1912, 18,545 and 290,386; in 1913, 25,843 and 413,857. Of the German emigrants in 1913, 19,124 were bound for the United States, 140 for Brazil, 6120 for other American countries, 359 for Australia. Of the foreign emigrants from German ports in 1913, 352,251 were bound for the United States, 56,209 for other American countries, and 4814 for the United Kingdom.

EDUCATION. Illiteracy in Germany is almost negligible. In 1911, there were 61,557 public elementary schools, with 148,217 male teachers, 39,268 female teachers, and 10,309,949 pupils (5,157,446 boys and 5,152,503 girls); in addition, there were 480 private elementary schools, with 26,151 pupils (11,894 boys and 14,257 girls). Public middle schools in 1911 numbered 914, and private middle schools, 1135; male teachers,



GERMAN EMPIRE
SCALE OF STATUTE MILES
0 20 40 60 80 100 120
SCALE OF KILOMETERS
0 40 80 120 160 200
Important towns are shown in heavy face type.
Railways shown thus
Canals
NORTH SEA
Longitude 12° East
L. L. POATES


BALTIC SEA
BORNHOLM
Gulf of Danzig
EAST PRUSSIA
WEST PRUSSIA
POMERANIA
POSEN
SILESIA
BRANDENBURG
POLAND
RUSSIA
GALICIA
AUSTRIA-HUNGARY
MORAVIA
BOHEMIA
Königsberg
Danzig
Stettin
Berlin
Frankfurt
Posen
Bromberg
Thorn
Breslau
Liegnitz
Görlitz
Dresden
Oppeln
Königshütte
Warsaw
Lodz
Cracow
Prague
Memel
Tilsit
Insterburg
Elbing
Marienburg
Graudenz
Kulm
Kalisz
Piotrkow
Czestochowa
Sandomir
Iwangorod
Plock
Kutno
R. Vistula
R. Oder
R. Warta
R. Elbe
R. Bug
R. Narew
R. Pilica
HAMBURG AND VICINITY
SCALE OF MILES
Hamburg
Altona
Wandsbek
Harburg
Blankenese
R. Elbe
BERLIN AND VICINITY
SCALE OF MILES
Berlin
Charlottenburg
Spandau
Potsdam
Tempelhof
Lichtenberg
14°
16°
18°
20°
22°
Greenwich
F
G
H
J
K
1
2
3
4
5
54°
52°
50°
48°

5147 and 1131; female teachers, 2384 and 3403; pupils, 273,394 and 80,660 (boys, 135,799 and 21,873; girls, 137,595 and 58,787). Higher schools for males numbered, in 1911, 1687, with 22,941 teachers, and 427,644 students; for females, 828, with 3012 male teachers, 9386 female teachers, and 234,461 students (not including 2051 boys under instruction at the girls' schools). Included in the higher schools for males were: 524 gymnasia, with 9769 teachers, and 160,237 students; 223 realgymnasia, with 3708 teachers, and 70,357 students; 167 oberrealschulen, with 3473 teachers, and 75,832 students; 81 progymnasia, with 570 teachers, and 9509 students; 63 prorealgymnasia, with 384 teachers, and 7252 students; and 411 realschulen, with 4265 teachers, and 89,968 students. Of the higher schools for females, 39 were gymnasia, with 432 male teachers, 607 female teachers, and 22,137 students.

Numerous institutions exist for higher, technical, and professional instruction. There are 11 degree-conferring technical high schools, at Aachen, Berlin, Brunswick, Breslau, Danzig, Darmstadt, Dresden, Hanover, Karlsruhe, Munich, and Stuttgart. These technical high schools, in the winter semester of 1912–13 had 11,003 regular students, while the total enrollment, including attendants upon lectures, etc., was 16,418, of whom 2312 were females; in the winter semester of 1913–14, regular students numbered 11,594, and the total enrollment was 16,871, of whom 1877 were females. Lyceums, with faculties of philosophy and Roman Catholic theology, are established at Bamberg, Brunswick (academy), Dillingen, Eichstätt, Freising, Passau, and Regensburg; these had, in the winter semester of 1913–14, 781 regular students, and a total enrollment of 967, of whom 63 were females. There are 21 universities; these, together with the Kaiser-Wilhelm Academy at Berlin, and the Posen Academy, had in the winter semester of 1912–13, 59,312 matriculated students (including 3213 females), and a total enrollment of 69,277 (including 5316 females); in the winter semester of 1913–14, 60,095 matriculated students (3686 females), and a total enrollment of 70,024 (5518 females). The following table shows the number of matriculated university students, and the total enrollment in the winter semester of 1912–13, and of 1913–14:

	1912-13		*1913-14*	
	Matric.	*Total*	*Matric.*	*Total*
Berlin	9,806	14,125	9,593	14,211
Kaiser-Wilhelm Academy	468	468	494	494
Bonn	4,179	4,479	4,270	4,550
Breslau	2,710	3,113	2,791	3,280
Göttingen	2,660	2,784	2,815	2,941
Greifswald	1,260	1,396	1,250	1,399
Halle	2,906	3,116	2,910	3,108
Kiel	1,738	1,800	1,847	1,923
Königsberg	1,616	1,872	1,568	1,675
Marburg	2,076	2,109	2,168	2,217
Münster	2,154	2,368	2,123	2,297
Posen (Academy)	.....	851	.....	830
Munich	6,759	7,718	6,802	7,664
Würzburg	1,455	1,548	1,515	1,586
Erlangen	1,261	1,307	1,341	1,388
Leipzig	5,351	6,328	5,532	6,463
Tübingen	1,898	2,016	1,887	2,013
Heidelberg	2,264	2,466	2,409	2,567
Freiberg in Breisgau	2,627	2,766	2,572	2,710
Giessen	1,338	1,525	1,340	1,514
Jena	1,842	1,937	1,862	1,944
Rostock	881	995	914	1,009
Strassburg	2,063	2,285	2,092	2,241
Total	59,312	69,277	60,095	70,024

In the winter semester of 1913–14, the number of matriculated university students in the several faculties was as follows: Evangelical theology, 4157 (including 11 females); Roman Catholic theology, 1685; law, 10,295 (including 65 females); medicine, 16,303 (880); philosophy, 25,784 (2617). The theological faculties at Münster, Munich, Würzburg, and Freiburg, are Roman Catholic; at Bonn, Breslau, Tübingen, and Strassburg, there are both Roman Catholic and Evangelical theological faculties; at the other universities, the theological faculties are Evangelical. In addition to the institutions mentioned, there are many schools for technical and special instruction.

AGRICULTURE. The total area of the country is stated at 54,085,760 hectares. So-called farm land in 1907 (the latest year for which statistics are available) comprised 43,106,486 ha. Of the farm land, 31,834,874 ha. (73.9 per cent) were under cultivation, 7,679,754 ha. (17.8 per cent) were profitable forest, and 3,591,858 ha. (8.3 per cent) were poor pasture, waste lands, yards, etc. The land under cultivation consisted of arable land, 24,432,354 ha. (56.7 per cent of the total farm land); meadows and sown pastures, 6,805,436 ha. (15.8 per cent); gardens, 481,716 ha. (1.1 per cent); and vineyards, 115,368 ha. (0.3 per cent). As compared with 1895, the year 1907 showed an increase in waste and forest land, and a slight decrease in cultivated land. In 1907, about 28 per cent of the population were supported by agriculture, as compared with about 35 per cent in 1895.

For some of the principal crops, the area harvested, in thousands of hectares, and the yield, in metric tons, are reported as follows (the areas for 1914 are provisional):

	1000 hectares			*Metric tons*	
	1912	*1913*	*1914*	*1912*	*1913*
Wheat	1,925	1,974	2,019	4,360,624	4,655,956
Rye	6,268	6,414	6,498	11,598,289	12,222,394
Barley	1,590	1,654	1,628	3,481,974	3,673,254
Oats	4,387	4,438	4,511	8,520,183	9,713,965
Potatoes	3,342	3,412	3,472	50,209,466	54,121,146

In 1913, 272,493 hectares were under spelt, yielding 438,469 metric tons; under hay, 5,923,647 ha., yielding 29,184,994 tons. In 1913, about 533,000 ha. were planted to sugar beets, and in 1914 about 569,000 ha. The areas under vines is gradually declining, from 119,873 ha. in 1904, to 105,876 in 1913; the yield varies greatly, having been 7.5 hectoliters in 1910, 26.6 in 1911, 18.6 in 1912, and 9.5 in 1913. The total yield of wine in the latter year was 1,004,947 hl. In 1912, 26,966 ha. were under hops, yielding 205,635 metric quintals; in 1913, 27,048 ha., and 106,179 qs. (of which Bavaria produced 66,583 qs.). The live stock census of Dec. 2, 1912, returned 4,523,059 horses, 13,147 mules and asses, 20,182,021 cattle, 5,803,445 sheep, 21,923,707 swine, 3,410,396 goats, 82,702,030 fowls, and 2,630,837 beehives. Horses increased in number from 4,195,361 in 1900, cattle from 18,939,692, swine from 16,807,014, and fowls from 64,453,171; while the number of sheep declined from 9,692,501. Census of Dec. 1, 1913: cattle, 20,994,344; sheep, 5,520,837; goats, 3,548,384; swine, 25,659,140.

FISHERIES. Value of the North Sea catch in 1912 and 1913, respectively: fish, 21,241,700 marks and 21,857,200 marks; shellfish, 798,400 and 962,200; other marine animals, 6700 and 5700; salt herring and other fishery products, 8,937,800 and 11,786,100; total, 30,984,600 and 34,611,200. Value of the Baltic catch in 1912 and 1913, including that of the bays (Stettiner Haff, etc.): fish, 10,554,500 marks and 10,341,100 marks; shellfish, 2900 and 6100; other animals regarded as marine (chiefly wild ducks), 24,700 and 31,000; total, 10,582,100 and 10,378,200. Total value of North Sea and Baltic catches in 1912 and 1913, 41,566,700 and 44,989,400 marks.

MINERALS AND METALS. The value of the mineral output of Germany (including Luxemburg) in 1912 is stated at 2369 million marks, as compared with 2086 million in 1911, and 2009 million in 1910. The production of the principal minerals in 1911 and 1912 are reported as follows, in thousands of metric tons: coal, 160,747 and 174,875; lignite, 73,774 and 80,935; iron ore, 29,879 and 27,200; zinc ore, 700 and 644; lead ore, 140 and 143; copper ore, 869 and 974; rock salt, 1436 and 1296; potassium salts, 9607 and 11,161. In 1913, the reported production of coal was 191,511,000 metric tons; lignite, 87,116,000; coke, 32,168,000; briquettes, 27,240,000. Output of pig iron in 1910 and 1911, 14,793,604 and 15,574,039 metric tons; zinc, 221,396 and 243,784; lead, 159,851 and 161,450; copper, 34,926 and 37,455; silver, 420.0 and 439.6; gold, 4625 and 4967 kilos; tin, 11,394 and 12,426 metric tons; sulphuric acid, 1,616,336 and 1,724,981. For 1913, the total output of pig iron was reported at 19,291,920 metric tons.

COMMERCE. Included in the customs territory is the grand duchy of Luxemburg. Total commerce, excepting goods merely in transit, is shown below in millions of marks:

	1908	*1910*	*1912*	*1913*
Imports:				
Merchandise ...	8,305.5	9,535.1	11,572.4	11,638.2
Coin and bullion	498.4	555.0	327.4	441.3
Total	8,803.9	10,090.1	11,899.8	12,079.6
Exports:				
Merchandise ...	7,019.3	8,079.7	9,684.2	10,891.2
Coin and bullion	133.0	352.9	142.9	102.8
Total	7,152.3	8,432.6	9,827.1	10,994.0

The special commerce, that is, imports for consumption, and exports of German produce, has been valued as follows, in millions of marks:

	1908	*1910*	*1912*	*1913*
Imports:				
Merchandise ...	7,666.6	8,934.1	10,691.8	10,770.3
Coin and bullion	410.5	875.9	325.7	436.4
Total	8,077.1	9,810.0	11,017.5	11,206.8
Exports:				
Merchandise ...	6,399.2	7,474.7	8,956.8	10,096.5
Coin and bullion	82.3	169.5	142.7	101.4
Total	6,481.5	7,644.2	9,099.5	10,197.9

Imports and exports of merchandise by great classes were valued as follows, in 1912 and 1913, in millions of marks:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
Raw materials ...	4,823.2	5,003.5	1,382.4	1,518.0
Partly mfd.	1,256.8	1,238.8	1,012.9	1,189.4
Manufactures ...	1,410.9	1,478.8	5,763.2	6,395.8
Food substances .	2,944.9	2,759.5	789.4	1,085.9
Live animals ...	256.0	289.7	8.9	7.4
Total	10,691.8	10,770.3	8,956.8	10,096.5

The value of the principal imports of merchandise for consumption was as follows in 1913, in millions of marks (figures in parenthesis for 1912): cereals, 1037.0 (1130.5); hides and skins, 672.4 (575.5); cotton, 664.1 (623.6); wool, 511.7 (527.0); chemicals and drugs, 421.8 (395.4); copper, 346.7 (320.0); timber, lumber, etc., 325.5 (355.5); live animals, 291.6 (252.9); coal, 289.6 (275.7); iron, 238.3 (213.3); copra, coconuts, etc., 225.9 (195.3); coffee, 219.7 (252.7); silk, 193.3 (222.9); eggs, 188.2 (187.5); fruits, 148.8 (126.0); rubber and gutta-percha, 146.1 (184.2); fish, 135.9 (126.5); leaf tobacco, 134.3 (135.6); wheaten products, 130.3 (186.8); linseed, 129.7 (104.8); animal fats, 118.9 (111.2); butter, 118.7 (126.3); oilcake, 118.6 (116.5); cotton yarn, 116.2 (104.0); flax and hemp, 114.4 (120.4); woolen yarn, 108.0 (107.6); rice, 103.9 (102.6); southern fruits, 101.2 (94.2); tin, 101.1 (107.2); jute, 94.0 (74.7); iron manufactures, 93.7 (97.9); meats, 81.4 (84.8); machinery, 80.4 (77.1); seeds, 78.3; silk goods, 73.7 (76.5); furs, etc., 72.5 (78.9); petroleum, 69.9 (62.9); lead, 67.3 (64.0); cacao, 67.1 (63.6); zinc, 64.0 (71.9); wines, 62.4 (65.9).

Value of the principal exports of domestic produce in 1913, in millions of marks (figures in parenthesis for 1912): iron manufactures, 1337.6 (1185.8); coal, 722.6 (611.9); machinery, 680.3 (630.3); chemicals and drugs, 658.0 (546.4); cotton goods, 446.5 (421.6); cereals, 421.7 (341.6); paints, dyes, colors, etc., 298.1 (278.2); electrical apparatus, 290.3 (239.7); woolen goods, 270.9 (253.4); sugar, 266.6 (132.2); paper, 262.8 (232.2); leather, 242.9 (230.1); copper manufactures, 240.7 (184.7); silk goods, 219.5 (205.2); furs, etc., 193.8 (182.2); hides and skins, 178.4 (182.3); ships, 175.2 (155.9); woolen yarn, 166.3 (84.2); glass and glassware, 146.1 (119.5); apparel, 132.0 (118.3); rubber manufactures, 128.3 (120.5); leather manufactures, 114.2 (98.1); vegetable oils, 113.7; pottery, 112.8 (102.0); wool, 112.6 (117.3); books, maps, etc., 104.8 (96.1); toys, 103.3 (92.3); cotton, 86.8 (80.7); musical instruments, 84.0 (78.0); gold and silver manufactures, 73.7 (66.9); wooden manufactures, 73.0 (68.5); cotton yarn, 61.1 (64.1); seeds, 50.2 (52.8).

The value of imports of merchandise for consumption, and of exports of domestic produce by countries in 1912 and 1913 was as follows, in millions of marks:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United States ...	1,586.0	1,711.5	697.6	713.2
Russia	1,527.9	1,424.6	679.8	880.0
United Kingdom .	842.6	876.1	1,161.1	1,438.2
Austria-Hungary .	830.0	827.3	1,035.3	1,104.8
France	552.2	584.2	689.4	789.9
British India ...	533.8	541.8	107.5	150.7
Argentina	444.9	494.5	239.4	265.9
Belgium	386.6	344.6	493.3	551.0
Netherlands	345.4	333.0	608.5	693.5
Italy	304.6	317.7	401.2	393.5
Australia	276.7	296.1	87.6	88.5
Brazil	313.2	247.9	192.8	199.8
Du. E. Indies ...	214.9	227.6	74.5	98.6
Sweden	214.0	224.1	197.4	229.8
Switzerland	205.7	213.3	520.5	536.1
Chile	209.7	199.8	112.0	97.8
Spain	189.8	198.7	118.0	143.0
Denmark	202.2	191.9	254.2	283.9
Br. W. Africa ..	118.6	134.5	15.2	16.7
China	115.6	130.0	81.7	122.8
Egypt	117.7	118.4	88.0	48.4
Norway	63.9	82.0	144.7	161.7
Rumania	138.2	79.8	131.7	140.0
Turkey	77.8	73.9	113.2	98.4
U. of S. Africa ..	67.2	69.6	44.5	46.9
Br. N. America ..	58.1	64.1	54.3	60.5
Japan	48.1	46.6	110.6	122.7
Finland	36.9	45.2	83.4	97.5

	Imports 1912	Imports 1918	Exports 1912	Exports 1918
Uruguay	50.8	48.2	88.5	85.8
Ceylon	89.7	41.9	4.8	5.1
Algeria	81.5	84.6	5.4	6.2
Greece	25.1	26.1	18.9	24.8
Portugal	24.7	25.8	42.2	52.1
Mexico	85.8	25.0	45.8	48.0
Total including other	10,691.8	10,770.8	8,956.8	10,096.5

Recapitulation of the trade, in millions of marks:

	Imports 1912	Imports 1918	Exports 1912	Exports 1918
Europe	6,008.0	5,889.8	6,748.6	7,677.2
America	2,885.4	2,994.2	1,496.4	1,546.5
Asia	1,005.9	1,048.9	418.0	545.8
Africa	434.2	454.2	188.4	158.7
Australia, etc.	296.1	817.4	91.7	101.1
German colonies	52.9	58.4	57.8	57.1
Not indicated	8.9	12.7	11.4	10.6
Total	10,691.8	10,770.8	8,956.8	10,096.5

SHIPPING. The number and registered tonnage of vessels entered and cleared at the ports in 1912 are shown below:

	Vessels entered No.	Vessels entered Tons	Vessels cleared No.	Vessels cleared Tons
German	87,948	19,429,056	87,046	19,284,699
Foreign	26,464	18,112,402	26,885	18,821,954
Total	114,407	82,541,458	113,981	82,606,658

Number and tonnage of steam vessels included above:

German	58,601	16,735,637	57,878	16,601,555
Foreign	16,478	12,265,485	16,647	12,444,950
Total	75,079	29,001,122	74,025	29,046,505

Of the total, there were entered in Hamburg in 1912, 17,150 vessels, of 13,683,373 tons; in Prussia, 80,903, of 12,186,428 tons; in Bremen, 5739, of 4,210,156 tons. In the table below is shown Germany's sea-going merchant marine Jan. 1, 1914 (excluded are steamers of less than 15 metric tons and sail of less than 22 metric tons):

	Vessels No.	Vessels 1000 t.	Of which, steam No.	Of which, steam 1000 t.
Hamburg	1,466	1,908,279	822	1,640,828
Bremen	718	937,610	461	810,275
Prussia	2,829	318,646	687	251,924
Oldenburg	298	60,476	80	87,288
Lübeck	54	49,158	58	48,876
Mecklenburg	75	45,907	67	48,671
Recapitulation:				
North Sea	3,948	2,988,216	1,587	2,520,609
Baltic Sea	987	381,855	583	311,708
Total 1914	4,935	3,320,071	2,170	2,832,312
Total 1918	4,850	3,158,724	2,098	2,655,496
Total 1909	4,640	2,825,449	1,955	2,302,959

COMMUNICATIONS. The length of railway in operation on March 31, 1914, was as follows (normal gauge, narrow gauge, and totals in kilometers):

Railway systems of	Norm. g.	Nar. g.	Total
Prussia-Hesse	39,126	239	39,365
Bavaria	8,230	115	8,345
Saxony	2,831	511	3,342
Württemberg	1,998	101	2,099
Baden	1,808	28	1,831
Mecklenburg	1,094	.....	1,094
Oldenburg	674	.....	674
Prussia (Royal Military Ry.)	71	.....	71
Alsace-Lorraine	2,031	80	2,111
Total state railways	57,858	1,074	58,982
Private railways	3,546	1,143	4,689
Total in 1914	61,404	2,217	63,621
Total in 1918	60,805	2,213	63,018
Total in 1912	59,992	2,215	62,207
Total in 1911	59,259	2,178	61,437

Totals in miles:

State railways	35,951	667	36,619
Private railways	2,203	710	2,914
Total in 1914	38,155	1,378	39,532
Total in 1918	37,783	1,375	39,158
Total in 1912	37,278	1,376	38,654
Total in 1911	36,822	1,353	38,175

At the outbreak of the war the railways were for the most part put on a military basis, and a war time-table, a general scheme of mobilization prepared for such occasions and in possession of railway officers, was carried out. It must be remembered that in addition to its main commercial traffic lines Germany had a number of short strategic lines on French and Belgian frontiers, built largely for military reasons.

During the year, in consequence of the war, the Germans were busy developing a network of strategic railways, and it was stated that between Berlin and Cologne no fewer than eight sets of railway lines had been laid down. The record for efficient and safe operation of passenger traffic in Germany was not altogether maintained during the unusual conditions established by the war in the operation of military railways. While details were not forthcoming, yet at least one serious accident due to the collision of a troop train with a freight was recorded. The effects of the war on the railways were felt during the year in many ways. The loss in traffic assumed enormous dimensions and certain classes of goods were being carried at reduced rates in order to bring them to a neutral market at a price which with the war insurance would make them saleable. Often such goods had to be taken on expensive railway journeys in order to put them at a neutral market, and the Hamburg Merchant's Association appealed for a reduction of rates, of 50 per cent on this account. At the beginning of 1914 the total length of the Bavarian State Railway system was about 4950 miles, of which somewhat less than 120 miles had been built during 1913. In 1914 only a few miles of purely local lines had been added, and but little if any construction was under way. In three successive years a total of $3,450,600 was voted for the electrification, of which $1,846,800 figured in the 1914–15 budget, though it was doubtful whether on account of the war any of this expenditure could be undertaken.

The imperial administration of posts and telegraphs embraces all the German States except Bavaria and Württemberg; these kingdoms operate, under certain limitations, their own postal and telegraphic systems. In addition to the State telegraphs, there are railway telegraph lines and some private lines. The figures in the following table relate to the year 1913 (the figures for the Empire are exclusive of those for Bavaria and Württemberg); *A* number of post offices, *B* State telegraph offices, *C* railway and private telegraph offices, *D* total telegraph offices, *E* length of State telegraph lines in kilometers, *F* length of State telegraph wire, *G* number of places (towns, etc.), having telephonic communication, *H* length of urban telephone lines in kilometers, *I* length of urban telephone wire, *J* length of interurban telephone wire, *K* receipts of posts, telegraphs, and telephones in thousands of marks, *L* expenses, *M* excess of receipts:

	Empire	*Bavaria*	*Württemburg*	*Total*
A	34,860	5,355	1,200	41,415
B	33,315	6,023	2,347	41,685
C	5,194	3,113	21	8,328
D	38,509	9,136	2,368	*50,013
E	195,451	31,656	11,436	238,493
F	649,822	95,918	19,587	765,327
G	32,897	5,935	2,255	41,087
H	115,668	10,649	2,875	129,192
I	5,464,234	375,905	127,637	5,967,776
J	1,213,829	89,618	52,994	1,356,441
K	833,315	80,713	31,978	946,006
L	743,622	64,295	22,939	830,857
M	89,692	16,418	9,039	115,149

*Exclusive of 17 radiotelegraph stations and 213 on board ship.

FINANCE. The monetary unit of Germany is the mark, whose par value is 23.821 cents. The imperial revenue and expenditure (ordinary, extraordinary, and total) have been as follows, for fiscal years, in thousands of marks:

	1909	*1910*	*1911*	*1912*
Revenue:				
Ord.	2,632,276	2,801,906	2,943,179	2,827,194
Extr. ...	674,845	141,514	114,413	88,190
Total .	3,307,120	2,943,419	3,057,592	2,915,384
Expend:				
Ord.	2,623,916	2,767,588	2,683,175	2,707,365
Extr. ...	642,529	256,672	214,228	185,973
Total .	3,266,445	3,024,261	2,897,403	2,893,338

The imperial budget for the year ended March 31, 1914, balanced at 3,696,033,215 marks (including extraordinary revenue and expenditure balancing at 118,634,500 marks). The budget for the fiscal year 1915, pursuant to laws of May 27 and Aug. 4, 1914, balanced at 8,797,930,350 marks (including extraordinary revenue and expenditure balancing at 5,392,752,000 marks). Of the extraordinary estimated revenue for the fiscal year 1915, loans accounted for 5,888,878,478 marks; and the estimated extraordinary expenditure voted for war was 5,300,000,000 marks. For the fiscal year 1915, the larger classes of estimated ordinary revenue were: customs, excise, stamps, etc., 2,075,103,771 marks (customs, 712,930,000; military contribution, 393,820,900; imperial stamps, 250,085,000; spirits excise, 193,995,000; sugar, 163,252,000; beer, 128,950,000, etc.); matricular contributions of the several States (exclusive of their contributions from spirits excise), 51,940,794; posts and telegraphs, 831,286,500; railways, 162,246,000. Larger estimated disbursements for the fiscal year 1915, including ordinary (permanent and transitory) and extraordinary: extraordinary expenses of the war, 5,300,000,000 marks; regular military administration, 1,238,004,127 (as compared with 1,368,685,243 marks estimated for the fiscal year 1914); posts and telegraphs, 818,789,569 (734,533,884); administration of the navy, 484,924,447 (480,253,894); debts of the Empire, 255,390,140 (243,557,366); general direction of finance, 191,057,062 (290,168,213); pensions, 145,276,920 (142,542,052); administration of the railways, 152,375,931 (139,671,611); interior, 128,142,374 (159,148,032); imperial treasury, 47,903,893 (43,975,875).

In October, 1913, the interest-bearing debt of the Empire was 5,177,225,300 marks, having increased 94,983,300 marks since October, 1912. The noninterest-bearing debt was: treasury bonds, 160,000,000 marks; paper money, 120,000,000. Total debt, 5,177,225,300 marks. At Spandau was kept a war fund of 120,000,000 marks in gold.

The interest-bearing debt plus outstanding paper money has stood as follows: in 1870, 485,601,300 marks; in 1880, 377,526,600; in 1890, 1,240,908,800; in 1900, 2,418,517,700; in 1905, 3,323,500,000; in 1910, 5,016,633,500; in 1911, 4,943,656,700; in 1912, 4,922,242,000; in 1913, 5,017,225,300.

ARMY. As detailed statistics of the strength and organization of the German army engaged in the great European War are manifestly impossible at the time the YEAR BOOK goes to press, it may be of advantage to consider the previous normal organization and strength of the military forces of the empire, and how they might be expanded to a war basis, as they were in 1914, when it was estimated that the united mobilization following the declaration of war on Russia, August 1, put into the field 1,000,000 rifles, 80,000 sabres, and 55,000 field guns.

Military service in Germany is obligatory from the beginning of the eighteenth year to the beginning of the forty-sixth. Under peace conditions the recruits are called up at the beginning of their twenty-first year. Normally those selected serve two years with the colors (three in the cavalry) and then pass to the active reserve for five years, or until the beginning of the twenty-eighth year. During this five-year period this reserve has two periods of training of about six weeks. Thence the men pass into the Landwehr, or second line army, which is divided into two "bans," the first comprising those between the ages of 27 and 32, and the second those from 32 to 39 years. From here the men pass into the second ban of the Landsturm, composed of all men between the ages of 39 and 45, and forming a reserve for home defense. Accordingly all men in the Landwehr have received active military training at least two years with the standing army, and five years in the reserve, in addition to two training periods of a week to a fortnight during the first half of their 12 years in the Landwehr itself. The Landsturm is composed of trained and untrained men, the former obviously being the Landwehr men, who at 39 years of age pass into the second ban of the Landsturm, while the untrained are those between 17 and 45 years of age, who have not been trained on account of lack of physical qualification, or because the contingent was in excess of the requirements, this being the usual case since the quota annually conscripted is probably twice as large as can be put under the colors. One-year volunteers made up of educated young men pay their own expenses and are specially trained to become commissioned officers in the reserve and Landwehr. There is also the Ersatz Reserve, upon which when war breaks out the call is first made for new training material. In the course of time the Ersatz men go into the Landsturm, being distinctly available as they are for the most part young men.

The scheme of organization provides for the bringing up to war strength of the various peace units by calling in the reserves, and with the inevitable wastage of war the Landwehr is drawn upon to make good the losses. Consequently, the war of 1914 was not in progress many weeks before the first line men of the reserves and Landwehr were serving in every German corps that was at the battle front, while in addition there were separate units of reserve and Landwehr organized into corps. The Landsturm in time of peace possesses no military organization and undergoes no training, but the German war plans unquestionably provided for the utilization and organization of this branch, as efficiently as other features of the military programme. The plan followed was to call out the unmarried men first and then the married men without children, and finally the others according to the number of their children. In the reserve the soldiers underwent military drill for two weeks each year, while the officers have all in all three exercises of eight weeks each. The first levy of the Landwehr is drilled twice, two weeks each time. The following was an estimate at the outbreak of the war of the effectives of the various reserve forces:

RESERVE EFFECTIVES

Reserve	1,060,000
Landwehr, First Levy	1,000,000
Landwehr, Second Levy	1,200,000
Ersatz reserve (trained but not armed)	10,500
Ersatz reserve (untrained)	880,000
Landsturm, First Levy (17 to 20 years)	1,250,000
Landsturm, First Levy (21 to 39 years)	1,700,000
Landsturm, Second Levy (trained)	1,000,000
Landsturm, Second Levy (untrained)	1,150,000

To what extent the above was drawn upon in the year 1914, so far as military critics could determine, was largely a matter of conjecture.

The German army, on a peace basis in 1914, consisted of 25 army corps, recruited as follows in territorial military districts: in the Kingdom of Prussia, Baden, and Hesse, 16; the Prussian Guard Corps, from the entire kingdom, 1; in Saxony, 2; in Württemberg, 1; the Reichsland (Alsace and Lorraine), 2; Bavaria, 3; in all, 25 army corps and 1 permanent cavalry division. The corps were organized into armies by assigning them to inspection districts, each of which was provided with a headquarters and staff. Normally 2 regiments of infantry (6 battalions) form a brigade (except the second guards, the fifth, forty-ninth, fifty-fourth, and sixty-second, which had 3 regiments), 2 brigades a division, and 2 divisions an army corps. There were 10 divisions, however, which had 3 brigades, and in war the scheme called for the addition of a brigade of reserve troops, to each division, so that the field army corps would consist of 6 brigades (36 battalions) and the necessary artillery regiments. To each infantry division was attached an artillery brigade of 12 batteries (72 guns), a regiment of 4 squadrons of cavalry; to each army corps, 4 batteries of howitzers, a pioneer (engineer) battalion, and a battalion of rifles (Jäger) are also attached. Cyclist companies, of which there were 18, were assigned as needed. Field batteries had 6 guns. The complete German division of 2 brigades had about 14,000 combatants; the corps of 2 divisions, 30,000. The division, increased in war to 3 brigades, gives 6 brigades to the war corps, amounting in all to about 43,000 combatants.

There was but one permanent cavalry division, but in war provision was made for the immediate formation of eight more from existing cavalry brigades, regiments, and squadrons. Strength, 3 brigades of 2 regiments each, with 2 or 3 batteries of horse artillery—in all, 24 squadrons and 8 or 12 guns.

Four companies of infantry form a battalion, 3 battalions and a machine gun company a regiment, 2 regiments a brigade, 2 brigades to the division, with one of the divisions in a corps having an extra battalion of sharpshooters (Jägers, or Schutzen), of which there were 18, each with the same organization as the infantry but with 4 companies. The war-strength infantry battalion counts about 25 officers and 1000 rifles, 60 horses, and 19 vehicles, which gives for the war company about 250. The law of 1913 provided for 651 battalions.

Five squadrons of cavalry form a regiment, 2 regiments to the brigade. The German squadron consists, on a war footing, of 6 officers and 172 men, with a fighting strength of 150. The fifth squadron is used to fill up the others and becomes a depot squadron. There were 550 squadrons before the outbreak of the war. Three batteries of field artillery form a battalion, 2 battalions to the regiment, 2 regiments to the brigade. The German light battery has 6 guns. Horse batteries have 4 guns. In peace the batteries vary in strength from 4 officers and 102 men to 4 officers and 128 men. In war the battery counts 5 officers and 150 men. Each German battalion in war has in addition a light ammunition column of 4 officers and 188 men.

Organization of the foot artillery varies greatly. A typical formation is 4 batteries to the battalion, 2 battalions to the regiment. There were 49 battalions forming 190 batteries at the beginning of the war. The heavy howitzer battalion numbered 1230 officers and men, including light ammunition train. One battalion of these was assigned to each corps. Each had 4 batteries of 4 guns each. Field and foot (fortress) artillery officers are on one list. Changes with changes of material naturally occurred during the war.

Under the Law of 1913, 5 aëroplane battalions (17 companies) were organized, and before the war there were between 25 and 30 dirigibles. The total personnel at that time was 173 officers and about 4500 enlisted men.

Germany divides its technical troops of this class into pioneer troops (131 companies, 33 battalions), and Verkerstruppen (lit., communication troops). The latter are further divided into railroad troops (7 battalions), telegraph troops (6 battalions), aërostation and aviation troops, automobile troops, etc. The 18 companies of cyclists are included in the strength of the infantry.

Supply train consisted of 25 battalions, each battalion composed of 3 companies and a bakery detachment. Strength, 631 officers, 10,961 enlisted men, and of course capable of expansion on a war base.

At Kiauchow, German marines and sailors, supplemented by native troops totalling about 4000 all ranks, were in service previous to the capture of the fortress of Tsingtau by the Japanese on November 5. Colonial troops, not included in the army, 340 officers, 2250 noncommissioned officers and men, 3830 native soldiers. In Southwest Africa there was a German force of about 150 officers and 2000 men, and in addition there were 600 native police with German officers. These forces were in conflict with the British after the outbreak of the war. There were also forces in East Africa and Kamerun.

The German infantry uses the Mauser magazine rifle, calibre 0.311 inch; the cavalry, the carbine of same type. Field and horse artillery use a Krupp gun firing a 15-pound projectile. The light and heavy field howitzers fire 30- and 94-pound projectiles respectively, while special heavy ordnance was used with effect during the war. See KRUPP.

The seacoast and land frontier of Germany amounts to about 4600 miles. The country before the war was divided into 10 fortress inspection districts, each including fortified places as follows: 1. *Königsberg:* Königsberg, Danzig, Pillau, Memel, Bogen. 2. *Posen:* Posen, Glogau, Neisse, Glatz. 3. *Berlin:* Spandau, Magdeburg, Torgau, Küstun. 4. *Mainz:* Mainz, Ulm, Rastatt. 5. *Metz:* Metz, Diedenhofen, Bitsch. 6. *Cologne:* Cologne, Koblenz, Wesel, Saarlouis. 7. *Kiel:* Kiel, Freidrichsort, Cuxhaven, Geestemünde, Wilhelmshaven, Swinemünde. 8. *Thorn:* Thorn, Grandanz, Vistula Passages, Dirschau. 9. *Strassburg:* Strassburg, New Breisach. 10. Munich, Ingolstadt, Germersheim.

NAVY. The German navy, as officially reported, included in the summer of 1914, the following (number, displacement, indicated horsepower):

	No.	*Tons*	*I. H. P.*
Ships of the line	37	608,500	716,600
Armored coast guards	8	32,900	40,000
Large cruisers	19	221,200	485,000
Small cruisers	38	130,200	520,100
Gunboats	11	9,520	17,300
School ships	7	20,200	18,950
Special ships	13	18,490	34,890
Total	133	1,041,010	1,832,840

The foregoing list is evidently exclusive of torpedo-boat destroyers.

The summary which follows is taken from a statement of the Office of Naval Intelligence at Washington, relating to July 1, 1914. Number and displacement of warships of 1500 or more tons, and of torpedo craft of 50 or more tons, built and building: Dreadnoughts (battleships having a main battery of all big guns, that is, 11 or more inches in calibre): built, 13, of 285,770 tons; building, 7, of 187,164 tons. Predreadnoughts (battleships of about 10,000 or more tons displacement, whose main batteries are of more than one calibre): built, 20, of 242,800 tons; building, none. Coast-defense vessels: built, 2, of 8168 tons; building, none. Battle cruisers (armored cruisers having guns of largest calibre in main battery and capable of taking their place in line of battle with the battleships): built, 4, of 88,749 tons; building, 4, of 112,000 tons. Armored cruisers: built, 9, of 94,245 tons; building, none. Cruisers: built, 41, of 150,747 tons; building, 5, of 26,900 tons. Torpedo-boat destroyers: built, 130, of 67,094 tons; building, 24, of 14,400 tons. Torpedo boats, none built or building. Submarines: built, 27, of 14,140 tons; building, 18, of 14,400 tons. Total tonnage: built, 951,713; building, 354,864. Excluded from the foregoing: ships over 20 years old from date of launch, unless reconstructed and rearmed within five years; torpedo craft over fifteen years old; vessels not actually begun or ordered, although authorized; transports, colliers, repair ships, torpedo-depot ships, and other auxiliaries. The battle cruiser *Goeben* (22,640 tons) and the cruiser *Breslau* (4550 tons) were reported as sold to Turkey after the outbreak of the war in 1914.

The active personnel in the summer of 1914 was reported at 79,197, including 2 admirals of the fleet, 6 admirals, 12 vice-admirals, 22 rear-admirals, 154 captains and commanders, 2220 other line officers, 448 midshipmen at sea, 577 engineer officers, 340 medical officers, 276 pay officers, 162 naval constructors, 30 chaplains, 3183 warrant officers, 65,797 enlisted men, 177 marine officers, and 5791 marines. See also NAVAL PROGRESS.

GOVERNMENT. The German Empire is a Federal State, with a constitution in force from May 4, 1871, and amended March 19, 1888. The constitution vests the executive power in the King of Prussia as German Emperor; he has power also to conclude treaties with other nations, to make war (if defensive) and peace, and to appoint and receive diplomatic representatives. In 1914 the Emperor was William II; he was born Jan. 27, 1859, and succeeded to the throne June 15, 1888. Heir-apparent, Prince Frederick William, born May 6, 1882.

The Imperial Legislature consists of the Bundesrat, or Federal Council (61 members appointed for each session by the governments of the several States), and the Reichstag (397 members elected for five years by direct vote).

The Imperial Ministers, or Secretaries of State, do not form a ministry proper, but act independently of each other under the general supervision of the imperial Chancellor, who is the highest official of the Empire. The Chancellor, who is president of the Bundesrat, is appointed by the Emperor without reference to the political majority in the Reichstag, and to the Emperor he is directly responsible. Imperial Chancellor (and Prussian Prime Minister) in 1914, Theobald von Bethmann-Hollweg (from July 14, 1909). The Imperial Secretaries of State in 1914 were: Secretary of State for Foreign Affairs, Gottlieb von Jagow (succeeding Alfred von Kiderlin-Waechter, who died Dec. 30, 1912); interior, Klemens Delbrück (from July 14, 1909); marine, Grand Admiral Alfred von Tirpitz (from June 15, 1897); justice, Hermann Lisco (from Nov. 1, 1909); treasury, Hermann Kühn (from March 16, 1912); posts and telegraphs, Reinhold Kraetke (from 1901); colonies, Wilhelm Solf (from Dec. 20, 1911).

HISTORY

CONSEQUENCES OF THE ZABERN INCIDENT. Political issues of prime importance were involved in the Zabern affair, of which some account was given in the 1913 YEAR BOOK. The incident in itself was trivial enough—the arrogant bearing of a young German army officer, a nobleman, in an Alsatian town had led to a conflict between the garrison and the townsfolk. But as the Imperial Ministry supported the garrison officer, and as the Kaiser supported the Imperial Ministry, in defiance of the Reichstag's overwhelming vote of no confidence, the dispute over the Zabern incident assumed the aspect of a battle for civil liberty and for responsible government. If the officers in question, Lieutenant von Forstner and Colonel von Reutter, were allowed to escape without punishment, it would mean that army officers could henceforth with impunity ride roughshod over the civil population; if the government continued to disregard the wishes of the Reichstag, one more triumph would have been scored for autocracy. The very greatest interest was therefore centred in the proceedings of the military court which was considering the cases of Lieutenant von Forstner and Colonel von Reutter. Late in December, 1913, the court-martial sentenced Lieutenant von Forstner to 43 days' imprisonment for violence and abuse of military privilege. Herr von Jagow, chief of the Berlin police, publicly expressed the opinion that the decision was wrong in principle, because it tended to destroy the authority of army officers. Early in January the court-martial acquitted Colonel von Reutter, of the Ninty-ninth Infantry, of the charge of improper usurpation of police power which had been brought against him for supporting young Von Forstner in the feud between the garrison and the town. Colonel von Schad, also involved in the case, was likewise acquitted. Furthermore a Superior Court-Martial shortly afterwards acquitted Von Forstner, on appeal from the lower court. It was an unqualified triumph for the military aristocracy; and it was rendered all the more conspicuous by the publication of a telegram which the Crown Prince sent to congratulate Von Reutter upon the acquittal. As an indication of the character of the army officers who were thus vindicated, it is interesting to note that in February suit was brought against Von Forstner for seducing the young daughter of a workingman. In order to prevent further trouble in Zabern, the obnoxious young lieutenant was transferred to a command at Bromberg in Prussian Poland, and Colonel von Reutter was given command of a distinguished grenadier regiment at Frankfort-on-Oder. The Ninety-ninth Infantry, however, which had been temporarily removed from Zabern, was allowed to return, with band playing, to its old quarters, on April 18. The Zabern incident came up for discussion in the Reichstag during the fourth week of January, as well as in the legislatures of Alsace-Lorraine, Prussia, Bavaria, and Baden; but protests were futile. In April the Prussian government published a new regulation for troops under Prussian military administration, regarding the use of arms in time of peace, and serving to give at least a clearer definition of the prerogatives of the military.

The Reichstag. The spring session of the Reichstag afforded more than one opportunity for the Imperial government to reiterate its determination to shield the military aristocracy against the Reichstag. When on March 13 the Centre party interpellated the government regarding duelling in the army and complained that the government had not taken steps to suppress the evil in accordance with the law and the expressed will of the Reichstag, the answer given by Minister of War Von Falkenhayn was no more nor less than a defense of duelling. The army, he said, had need of officers who valued their honor more than their lives; he would not for a moment consider a military prohibition of duelling; but he thought that the small number of duels fought in 1913—only 16—pointed to the dying out of the custom. The Reichstag then gave expression to its indignation by passing an ineffective resolution in favor of the imposition of more severe penalties on duelling. Likewise in regard to the modification of the penal code, the Reichstag's will, embodied in a Bill, was set at nought by the government and declared unacceptable. Another quarrel between Reichstag and government was caused in May by the government's refusal to sanction a measure which the Reichstag passed for an increase in the salaries of certain classes of government employees. On May 20 the session of the Reichstag was closed. It had produced: (1) A Law to prevent the betrayal of military secrets; (2) A Law for the revision of fees payable to witnesses and experts; (3) A Law to facilitate the construction of dwellings for Imperial and military authorities and workers; (4) Extension of the Mail Ship Subvention Law to promote communication by sea with East Asia and Australia. The Sundays Rest Bill, the Succession Rights of the State Bill, the Petroleum Monopoly Bill, and other important measures were not completed at the close of the session and had to be dropped. At the closing sitting of the Reichstag, when President Kaempf proposed the customary cheer for the Kaiser (*Hoch auf den Kaiser*), the Social Democrats, instead of leaving the hall as in former years, remained seated and silent as a manifestation of their republican convictions. A disorderly scene ensued, and for a week or more the bourgeois press was filled with angry comment upon the Socialist affront to the Kaiser.

Campaign Against the Socialists. The refusal of the Social Democrat deputies to honor the *Hoch auf den Kaiser* was their reply to the campaign against Social Democracy which of late the government had been prosecuting with unusual vigor. In the course of the January budget debates, Secretary of State Delbrück had announced that the government considered it advisable to discontinue the work of social legislation. For the present no more laws were to be enacted for the amelioration of the social and economic condition of the working classes at the expense of the State and of the employer. At a meeting of the German Agricultural Council, the Imperial Chancellor von Bethmann-Hollweg declared the intention of the government to fight against the menace of Socialism. It was obvious that the Prussian Conservative landed nobility—*Junkerthum*, as it has been called—was behind the government in the war against the party of social revolution. Alarmed at the belligerent attitude of the government, and anxious to recover the power of growth which their party seemed to have lost since the last election, the Social Democrats instituted a Red Week from March 8 to March 14, during which time they carried on an active propaganda and held numerous meetings. (Consult the article on Socialism, *Germany*.) The following week witnessed the session of the German Trade Congress (*Handelstag*) in Berlin, which strenuously condemned the government and the Reichstag for neglecting business interests. In behalf of the business interests, the Congress protested against social legislation and socialistic taxation. In April the Central Committee of the National Liberal party, the party which had once been expected to coöperate with the Social Democratic party in a *bloc* of the Left, issued the command that henceforth National Liberal candidates in electoral contests must refrain from making promises to any other parties, and above all to the Social Democrats.

The Centre Party. During the spring of 1914 the Centre or Catholic Party was profoundly perturbed by a revival of the old dispute as to whether loyal Catholics should encourage the participation of Catholic workingmen in the Christian Trade Unions, which included workingmen who were not Catholics. The controversy was reopened by the prince-bishop of Breslau, Cardinal Kopp, who in a letter to Count Oppersdorf sharply attacked the advocates of Catholic participation in the Christian Unions. Cardinal Kopp retracted his letter in February, but the Centre Party had already taken alarm and issued a statement deprecating any controversy which might have the effect of undermining popular confidence in the party; for the Centre had favored the Christian Unions. As a counterblast to the statement of the Centre, the bishops of Trier, Osnabrück, Paderborn, Hildesheim, and Münster, and the Archbishop of Cologne issued a declaration that interconfessional trade unions were tolerated rather than favored by the clergy. Thereupon the Central Committee of the Centre party met at Essen and declared that the party was not subject to the authority of ecclesiastical dignitaries, and again pronounced in favor of the Christian Unions. The "Berlin tendency" towards the rigid insistence upon separate Catholic unions was rebuked. On March 1 a meeting was held in Cologne at which some 4000 voices were raised against attempts to divert the Centre party from its old policy of friendliness to the Christian Unions. On March 4 Cardinal Kopp, the weaver's son who had risen to the dignity of prince-bishop, suddenly died, and the controversy which he had begun was dropped for the time being. Again in July, however, the Centre party's programme was attacked, this time by the Italian bishop of Como. Another circumstance over which the Catholics of Germany were much exercised was the allegation made by several journals in April that the Kaiser had written a letter to the landgravine of Hesse on the occasion of her conversion to the Catholic faith, declaring his hatred for the Catholic religion which she had seen fit to embrace. A *communiqué* was issued by the government, however, emphatically denying that the letter was more than a family affair, or that it contained any attack upon the Roman Catholic Church.

Diplomacy and Defense. The first half of the year was signalized by notable diplomatic exertions concurrent with important defensive preparations on the part of Germany. In the first two months attention was mainly occupied by the unsettled state of affairs in the Balkans, and by the attempt of Sir Edward Grey to bring about a settlement. While the British policy was officially complimented, there was not complete satisfaction in Germany, as it was felt that interests of the Triple Alliance had suffered because of the Balkan Wars. In regard to Anglo-German naval competition, Von Tirpitz declared his willingness to acquiesce in the British 16 to 10 superiority, but he declined Mr. Churchill's proposal for a year's suspension of naval construction. When Great Britain was ready to make more definite propositions to abate the ruinous competition in armaments, Germany would give them careful consideration. In the meantime, the strengthening of the German navy continued. In March Russia rather than Great Britain occupied the centre of the stage. Starting with articles in the *Cologne Gazette* and in *Germania*, a furious press campaign was conducted against Russia. For a time free rein was allowed to the pan-German journals, and a high pitch of excitement was reached. Then the scare was declared to be without foundation by semiofficial organs and a mild rebuke was administered to the Jingo journalists by State Secretary von Jagow. The month of March, which witnessed the Russophobe campaign in the press, was also remarkable for the Kaiser's visit to Francis Joseph at Schönbrunn, to Victor Emmanuel at Venice, and to Francis Ferdinand at Castle Miramar; and the extraordinarily long conferences held on these occasions with the foreign ministers of Austria-Hungary and of Italy indicated more than a perfunctory courtesy as the motive of the Kaiser's journey. In May, during the budget discussions, Von Jagow freely bespoke the dangerous character of the recent agitation in the press, but at the same time laid stress on the friendship of Germany for England and upon the solidarity of the Triple Alliance. In the same month the Minister of War, Von Falkenhayn, stated that the great army increase decreed in the summer of 1913 had been effected, and the army was in splendid shape. The enormous Defense Levy, it should also be remembered, was paid in the summer of 1914. On June 24 the Kiel canal, which had been enlarged to permit the passage of the largest warships, was reopened with great ceremony. By affording a ready means of transit from the Baltic to the North Sea, the enlarged canal tremendously augmented the effective power of the German navy. In June, too, the Kaiser visited the ambitious Archduke Francis Ferdinand, heir to the Austrian crown, in the latter's castle Konopischt; and at the special request of the Archduke, Grand Admiral von Tirpitz, Secretary of the Navy, accompanied the Kaiser.

The Great War and the German Nation. The crime at the close of June and the crisis at the close of July which led to the greatest war in history, and the part borne by Germany in the precipitation and in the operations of the war, are discussed at some length in the article on the War of the Nations (q.v.). In this place may be noted only a few of the more prominent features of Germany's internal history during the historic second half of the year 1914. A day before Austria-Hungary declared war on Servia, the Kaiser interrupted his tour in the North and returned to the palace at Potsdam, where he conferred with the Chancellor, the naval authorities, and the chief of the general staff. On July 31, in the afternoon, he arrived in Berlin, and made a speech from the balcony of his palace, using the striking words: "The sword is being forced into our hand. I hope, if at the last hour my exertions do not succeed in bringing our opponents to their senses and preserving the peace, that we shall wield the sword with God's help in such manner that we may sheathe it again with honor." A few minutes before midnight, still on July 31, the Imperial Chancellor used almost the exact words of the Kaiser, that the sword was being thrust into the hand of Germany. This was before the war began. Not until the following day, August 1, at half past five in the afternoon, was the official order issued for the German army to mobilize for war against Russia. Crowds surged through the streets of Berlin cheering and singing patriotic songs. The war found the German nation superbly confident and tremendously patriotic.

At one o'clock in the afternoon of August 4 the Kaiser received the Reichstag in special session in the White Room of the Royal Palace, and from the Throne read a speech that has already become historic, declaring that Germany had now to defend herself against the Chauvinism of Russia and the malice of France, and concluding with a stirring appeal to German loyalty. At the close of his speech, the Kaiser added, ". . . I no longer recognize parties, I recognize only Germans; and in proof that they are firmly determined to stand by me, without distinction of party, without difference of class or of creed, through thick and through thin, through distress and through death, I summon the leaders of the parties to step forward and give me their hands upon it." At three o'clock the same day the Reichstag held a special sitting to hear Von Bethmann-Hollweg's version of the causes of the war. At five, a second sitting was opened by the president, Dr. Kaempf, who read all the War Bills which the Reichstag was asked to pass. The Social Democrat Haase promised the consent of his party in advance. The Bills were unanimously passed amidst lusty cheering. A war expenditure of $1,250,000,000 was authorized. Then the session was adjourned to November 24. This time the Social Democrats stood up for the *Kaiserhoch*. After the feverish excitement of the first few days of mobilization, the German government set about the serious problems of financing the war, protecting industry, and relieving want. In September a loan of a billion marks, the first installment of the authorized war credit, was issued in 5 per cent Imperial Treasury Bills; thirty millions were immediately subscribed by the firm and family of Krupp. So favorable was the reception of the loan, that, by October 15, 4,500,000,000 marks had been subscribed, and by October 21 more than three billions had been paid in cash. By the formation of special institutions of credit, and thanks to a favorable financial situation, Germany was able to avoid declaring a general moratorium. Food supply and prices were regulated by the Bundesrat. A good grain crop was harvested, notwithstanding mobilization. The textile and metal industries were able to survive the crisis without serious paralysis, although some other industries were less fortunate. For example, at the end of November the report was received from German sources that whereas only 9 per cent of the members of the metal workers' union were out of work, the greater part of the female factory workers were unemployed. The Kaiser in August contributed 50,000 marks for the relief of the unemployed in Berlin.

The second war session of the Reichstag in December voted a second war credit of 5,000,000,000 marks, with only one dissenting vote. That vote was cast in the negative by the Social Democrat, Karl Liebknecht, who alone of the Socialist deputies remained true to the conviction that the only war in which workingmen should fight is the war against capitalist domination. Many of the Social Democratic deputies, who had in past years solemnly discussed the feasibility of calling a general strike in case of war, and had many times denounced the undemocratic character of the German government, at the outbreak of war, without a murmur, had pledged their loyalty to Kaiser and country; some had even given their lives for the Empire. But Liebknecht and a few other Socialists—the uncompromising Rosa Luxemburg, Franz Mehring, and Clara Zedtkin—in November issued a manifesto, which was published in Switzerland, declaring that they held opinions about the war which were not shared by the other Social Democrats, and which could not be expressed during the reign of martial law. The adverse vote of Dr. Liebknecht in the Reichstag, following upon the November manifesto, gave clear proof that at least a minority of the Socialists had not been swept off their feet by the German nation's outburst of patriotic emotion. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

CASUALTIES IN THE REIGNING DYNASTIES. Not a few members of the reigning families of the various German States lost their lives in the war. Prince Frederick of Saxe-Meiningen, younger brother of the reigning duke, was killed before Namur, August 23. His son was buried at Maubeuge. Prince Frederick of Lippe met his death at Liége. Prince Ernst of Lippe, a cousin of the reigning Prince Leopold IV, was another victim. Prince Maximilian of Hesse, nephew of the Kaiser, was found on the battlefield in France. Late in October a casualty list was published containing the name of Prince Henry of Reuss, son and heir of Prince Henry XXVII, the reigning Prince of Reuss, Younger Branch. In this connection it may also be noted that Prince Adalbert, third son of the Kaiser, was betrothed to Princess Adelaide, granddaughter of the Duke of Saxe-Meiningen; and Prince Oscar, the Kaiser's fifth son, was married at the outbreak of the war to Countess Sophie von Bassowitch.

AFFAIRS IN THE STATES OF THE EMPIRE. In an earlier paragraph the Zabern affair, an incident in the occupation of Alsace-Lorraine by German garrisons, has been discussed in its bearing upon the general political situation in Germany. One of its consequences for Alsace-Lorraine was the resignation on January 29 of the Statthalter Count Wedel and the leading members of the ministry of the Reichsland: Baron Zorn von Bulach, the secretary of state; Herr Mandel, minister of the interior; Dr. Petri, education and justice; Herr Köhler, finance and commerce. Herr Köhler and Count Wedel were induced to retain their offices; but the resignations of the others were accepted. Baron Zorn von Bulach received the crown of the first class of the Order of the Red Eagle, and was given a seat in the upper chamber of the Diet of the Reichsland; his successor was Count Rödern, a former Prussian official, who took the portfolio of the interior in addition to the secretaryship of state. Baron von Stein, a Bavarian, was appointed to take charge of agriculture and public works. In April Count von Wedel retired from the office of Statthalter, and was exalted by the Kaiser to the rank of prince. His successor as Statthalter was the Prussian minister of the interior, von Dallwitz, a magistrate hardly likely to conciliate the irate Alsatians. One of the new Statthalter's first acts was his refusal to sanction the reëlection of Mayor Knöpffler of Strassburg, because Knöpffler had taken up a position hostile to the Imperial and military authorities in the Zabern affair. This infringement of electoral rights provoked strenuous protests even outside of the Reichsland. As examples of the severity which characterized the new administration from the first, may be quoted the reënforced prohibition on the wearing of French colors, and the provision that henceforth army recruits from the Reichsland should not be allowed to serve in their native province. For the history of Alsace-Lorraine during the war consult the article on the War of the Nations.

In Bavaria, King Ludwig III on January 7 bestowed the hereditary title of count on Baron von Hertling in recognition of that minister's distinguished public service. In March the Bavarian Chamber of Deputies passed a budgetary provision for the appropriation of 75,000 marks for the purpose of State insurance against involuntary unemployment. In Brunswick, at the close of December, 1913, the Hartwieg ministry resigned, having carried through the question of the succession; and a new cabinet was formed by the former minister of the interior, Herr Wolff. On March 18 an heir to the Brunswick throne was born to Duchess Victoria Louise (daughter of the Kaiser) and Duke Ernst August. In Mecklenburg, Count Bassewitz was replaced as head of the ministry by Privy Councilor Langfeld. On June 11 Grand Duke Adolf Friedrich of Mecklenburg-Strelitz died in Berlin, and was succeeded by his thirty-two-year-old son, Adolf Friedrich.

In Prussia a spirit of reactionary particularism was manifested in January, when the Prussian Conservatives in the Prussian Herrenhaus (House of Lords) attacked the imperial policy of Von Bethmann-Hollweg, and demanded to know whether Prussia's rightful power was to be overshadowed by the influence of the smaller States in the Reichstag. Especially the Prussian Conservatives resented the way in which the Imperial Defense Levy had been adjusted to bear most heavily upon the wealthier classes. Dr. Kaempf, as president of the Reichstag, on the 14th, publicly repudiated the criticisms leveled against that body by the Prussian Conservatives. The appointment of the Prussian minister of the interior, Von Dallwitz, to the post of Statthalter of the Reichsland removed from the Prussian cabinet the most strenuous antagonist of even moderately democratic electoral reform. The new minister of the interior, Herr Loebell, a friend and an associate of Ex-Chancellor von Bülow, took office about May 1. The hope that the change in the personnel of the ministry might mean also a favorable change in the policy towards electoral reform, was sadly disappointed on May 18 when in the course of his inaugural speech Herr Loebell declared that he had no intention of drawing up a Franchise Bill. A debate in the Prussian Herrenhaus towards the end of May was enlivened by the assertion made by several speakers that the conciliatory policy adopted in 1907 for the pacification of North Schleswig had completely broken down, and that the only solution of the Schleswig problem would be the adoption of positive measures for strengthening the *Deutschtum* (the German character) of the province in opposition to the Danish agitation. On this occasion Von Bethmann-Hollweg uttered a warning against exciting Denmark by too much Chauvinistic talk. In October the Prussian Diet held a brief war session, and unanimously granted a war credit of 1,500,000,000 marks. Vice-Chancellor Delbrück informed the Diet that the government intended to indemnify the people of East Prussia for their losses at the hands of the Russians, and that extensive public works would be undertaken, especially the draining of the moorlands, with the two-fold object of relieving unemployment and increasing the production of food.

In Saxe-Coburg-Gotha a dispute over the question of popular rights in the forests led to a ministerial crisis, which issued in the resignation of the prime minister, Von Richter. The new premier was identified with the court party which had supported the duke in the clearly joined issue against Von Richter, and against the body of popular opinion, the duke's determination to extend his own personal rights over his forest-lands being deeply resented by the peasants. Duke Georg II of Saxe-Meiningen died June 25, in his eighty-ninth year; he was succeeded by his eldest son, Prince Bernhard, who was born April 1, 1851.

GERMANY, Archæology of. See Archæology.

GIBRALTAR. A narrow peninsula extending southward from the southwest coast of Spain; a British crown colony, naval and coaling station, and *entrepôt* of the British trade with the Barbary States. The port is free. Its area is 1⅞ square miles, and its greatest elevation 1439 feet. Population, 1912, 18,446, exclusive of military; 18,381 in 1881. About 450 people are employed in tobacco manufactories, and 1200 in the coal depots. There are no trade returns. Tonnage entered and cleared, 1912, 11,999,002, of which 7,332,556 British. Revenue, 1912, £105,738; expenditure, £81,613. Lieut. Gen. Sir H. S. G. Miles was Governor and commander-in-chief in 1914; he is sole administrator, without executive or legislative councils.

GIFTS AND BEQUESTS. The following list of gifts and bequests made during 1914 is taken from the annual record, published in the *Chicago Tribune*. It has, however, been arranged alphabetically. The amounts given in gifts and bequests during the year surpassed those of any previous year. The list takes no account of contributions made to the Red Cross and other national funds, or of the value of the cargoes, Christmas ships, shipments of grain and clothing, and personal donations sent to Europe. The value of such gifts would probably raise the total for the year to $250,000,000. Outside of war charities the total for the year amounts to $218,599,482, as compared with $169,841,442 in 1913. It must be taken into consideration that this total includes only donations of a public character which have been made public. If there were to be added the sums that have been privately given and have not appeared in print, it is probable that the total would at least be doubled. Of the amounts given and publicly recorded, $146,970,388 represents donations, and $71,629,094 bequests. This large sum was distributed as follows: Charities of various kinds, $104,377,970; educational institutions, $90,741,210; religious organizations, $3,685,798; art museums, galleries, and municipal improvements, $17,913,000, and to libraries $1,881,000. Gifts and bequests amounting to $26,630,947 were given by women. A notable feature of the gifts and bequests made during the year is that more than one-half came from thirty-nine persons. The chief givers, as in previous years, were Andrew Carnegie, John D. Rockefeller, and Mrs. Russell Sage. Among other notable gifts and bequests made during the year may be noted the following: Henry Phipps, New York, to various institutions, $15,000,000; by various donors to the Cleveland Foundation, $20,000,000; W. H. Riggs, gift of armor to the Metropolitan Museum of Art, $5,000,000; Mrs. Morris K. Jesup, to various charitable institutions of New York City, $7,960,000. See UNIVERSITIES AND COLLEGES, *Gifts and Endowments*.

Abbie, Hannah B., New Bedford, Mass., will to charity, $20,000.

Abbie, Mrs. William, New Bedford, Mass., will to charity, $90.000; to Institute of Technology, $10,000.

Adams, Mary D., Northton, Mass., will to charity, $10,000.

Alexander, W. A., Mobile, Ala., will to church, $17,000.

Allen, Edmund, Philadelphia, Pa., gift to employees, $5000.

American Academy, Rome, gift by Rockefeller foundation, $10,000.

American Jewish Commission, New York, gift to charity, $27,000.

American Museum of Natural History, will by Mrs. Morris K. Jesup, $5,000,000; gift by Morris Loeb, $36,947.

Anatolia College, will by Sarkis G. Telfeya, $10,000.

Andover Academy, will by Melville C. Day, $800,000.

Andrews, Eliza, Baltimore, Md., will to church, $282,005.

Art institute, Chicago, Ill., will by Alexander A. McKay, $100,000.

Art Museum, will by Josephine A. Binney, $5000; will by Hugo Reisinger, $150,000.

Arts, Z. B., Chicago, Ill., will to Fredericksburg, Md., library, $100,000.

Atlanta, Ga., gift to greater Baptist hospital by various donors, $285,000.

Augusta, Ga., will to library by W. H. Wolverton, $25,000.

Baby fund, Chicago, Ill., gift by various donors, $51,692.

Bacon, A. O., Macon, Ga., will of park to city, $110,000.

Baldwin, Mrs., H. A., Burbank, Colo., gifts to church, $55.000.

Balentine, Mrs. Robert, Newark, N. J., gift of swimming pool, $20,000.

Balton, Mahlon, Philadelphia, Pa., will to charity, $66,000.

Bangor library, will by George S. Snyder, $5000.

Barlow, Sarah R., Paterson, N. J., will to charity, $15,000.

Barnard College, gift by Mrs. E. H. Harriman, $50,000.

Bartlett, Abigail, Deering, N. H., gift to Dartmouth College, $10,000.

Beebe, J. A., Barnstable, Mass., will to Harvard university, $170,000; to church, $50,000.

Belknap, Lucy, Louisville, Ky., will to charity, $30,000; to Lincoln Institute, $20,000.

Belknap, W. R., Louisville, Ky., will to church, $5000; to charity, $5000.

Belmont, Mrs. O. H. P., New York, gift to Suffrage cause, $5000.

Beloit College, gift by various donors, $50,000.

Bennett, Elizabeth D., Brookline, Mass., will to charity, $6000.

Benton, J. H., New York, gift to library, $10,000.

Berlin University, gift by unnamed donor, St. Louis, Mo., $50,000.

Bethlehem, Pa., gift to Band hall by Charles M. Schwab, $100,000.

Bigelow Monument fund, gift by Andrew Carnegie, $5000.

Billings, Julia, Woodstock, Vt., will to Northfield seminary, $120,000.

Binney, Josephine A., Providence, R. I., will to libraries, $22,000; to charity, $10,000; to church, $10,000; to Brown University, $10,000; to Art Museum, $5000. .

Bird Protective Society, gift by Mrs. Russell Sage, $10,000.

Blair, Mrs. Devitt O., Belvidere, N. Y., will to charity, $40,000.

Block, Joseph, Chicago, will to charity, $20,000.

Bohn, Emma, Glenside, Pa., will to charity, $22,000.

Borndt, Edith, Philadelphia, Pa., will to charity, $5000.

Boston, Mass., gift to charity by various donors, $205,258; will to city by Charles A. Greenwood, $40,000.

Boston Museum of Fine Arts, will by Nathaniel Thayer, $50,000.

Boston University, gift by various donors, $11,000; gift by unnamed donor, $80,000.

Boston University, school of medicine, gift by various donors, $100,000.

Bourne, Frederick A., New York, gift to Cathedral of St. John the Divine, $500,000.

Bowdoin College, will by Frank Hartley, $290,420; by Edwin K. Smith, $500,000; by George S. Snyder, $10,000.

Bowen, Helen A., Philadelphia, Pa., gift to Mt. Airy Seminary, $20,000.

Boys' home, gift by Francis A. Hardy, $100,000.

Bradley, Annie G., Manchester, N. H., will to art institute, $10,000; to charity, $10,000; to church, $5000.

Brady family, gift to Yale University, $625,000.

Brasseler, T. S., will to Catholic University of America, $1,000,000; to Parochial school, $127,000.

Bridgeton, Me., Academy, gift by Henry D. Cleaver, $22,500.

Bridgeton, N. Y., will to library by E. W. Shoemaker, $5000.

Brigham, Ellen D., Marlboro, Mass., will to church, $10,000.

Brooklyn Institute of Arts and Sciences, will by Lina V. Happel, $250,000.

Browne, Rebecca W., Boston, Mass., will to Harvard University, $10,000.

Brown University, will by Josephine A. Binney, $10,000; gift by Philadelphia alumni, $10,000; will by Ferris S. Thompson, $1,500,000.

Bryn Mawr College, gift by Elizabeth F. Shippen, $10,000.

Buck, Harris, Decatur, Ill., gift to Illinois Wesleyan University, $200,000.

Buffum, Mary L., Providence, R. I., will to charity, $10,000.

Bulgarian sufferers, gift by J. D. Rockefeller, $10,000.

Burke, J. M., residuary estate of, to charity, $2,000,000.

Burke, Mary E. D., Orleans, Mass., will to charity $5000.

Burnham, Frances E., Seabrook, N. H., will to charity, $125,000.

Busch, Mrs. Adolphus, gift to Harvard University, $50,000.

Butler, Edward H., Buffalo, N. Y., will to charity, $165,000.

Byler, Martha F., gift to Yale University, $10,000.

Cadwallader, J. L., New York, will to public library, $100,000; to Metropolitan Museum of Art, $25,000; to Princeton University, $25,000; to Harvard University, $25,000; to New York Zoölogical Society, $20,000.

Caldwell, Mrs. B. D., E. Orange, N. J., gift to De Pauw University, $9100.

California University gift by Mrs. F. W. Hooper, $2,000,000; by various donors, $1,807,929.

Calvert, Mary, St. Louis, Mo., gift to children's hospital, $50,000.

Campbell, Thomas, St. Louis, Mo., conditional bequest for hospital to St. Louis University, $40,000,000.

Cancer research, gift by Lambert Snydam, $25,000.

Candler, Asa, Atlanta, Ga., gift to Methodist University, $1,000,000.

Capen, S. B., Boston, Mass., will to church, $14,600.

Carland, Mary, New York, will to church, $20,000.

Carlinville, Ill., will to library by Susan Dick, $15,000.

Carnegie, Andrew, gift to Bigelow monument fund, $5000; to New York Zoölogical Park, $100,000; to Pittsburgh Carnegie Institution, $2,000,000; to churches for promotion of international peace, $2,000,000; to Rockford College, $85,000; to United Kingdom trust $10,000; gift of library to Clovis, Cal., $7,000; to Corydon, Ind., $7500; to Dover, N. J., $20,000; to Greendale, Mass., $35,000; to Hamburg, N. Y., $5000; to Medford, Wis., $6000; to Mooresville, Ind., $10,000; to New Haven, Conn., $60,000; to Oakland, Cal., $140,000; to Orange, N. J., $40,000; to San Anselmo, Cal., $10,000; to St. Paul, Minn., $75,000; to West Alles, Wis., $10,000.

Carnegie, Mrs. Andrew, gift to charity, $5000.

Carnegie Education Board, gift to Washington University, St. Louis, $750,000.

Carpenter, Susan M., Philadelphia, Pa., will to church, $10,000.

Cathedral of St. John the Divine, gift by Frederick G. Bourne, $500,000.

Catholic education, gift by Cardinal Gibbons, $800,000.

Catholic University of America, will by T. S. Brasseler, $1,000,000; gift by Knights of Columbus, $500,000.

Central College, Fayette, Mo., gift by various donors, $265,000.

Central Female College, gift by W. B. Palmore, $40,000.

Chamberlain, Eleazar D., Concord, Mass., will to charity, $70,000.

Chamberlain, Emily, New York, will to charity, $8000.

Chamber of Commerce, New York, gift for College of Commerce, $800,000.

Chapin, Augusta E., New York, will to charity, $82,000.

Chapin, Emil and family, Chicago, Ill., gift to Half Orphan Asylum, $70,000.

Chapin, S. W., Springfield, Mass., will to hospital $70,000.

Charity ball, Chicago, Ill., $25,000.

Chicago, Ill., gift of Country Club to social workers by Julius Rosenwald, $50,000; gift of fountain to city by David Wallach, $5000.

Children's gift, New York to missions, $9875.

Children's hospital, St. Louis, Mo., gift by Mary Calvert, $50,000.

Chorley, Charlotte, Philadelphia, Pa., will to charity, $8000.

Chorley, Margaret E., Philadelphia, Pa., will to charity, $7000.

Christian church, Texas, gift by various donors, $400,000.

Cincinnati Art Museum, gift by Mrs. Mary M. Emery, $350,000.

Clark, J. H., Amherst, N. H., will to church, $10,000.

Clark, William A., gift to Corcoran Gallery, $5000.

Clark, W. M., gift for Montana building, Panama Exposition, $10,000.

Clarkson, Josephine M., will to University of Rochester, $7000.

Cleaver, Henry D., will to Bridgeton, Me., Academy, $22,500.

Clement, Clara E., Kenton, Ohio, will to church, $6300.

Cleveland, Eliza C., Jamaica Plain, Mass., will to charity, $22,000.

Cleveland foundation, gift by various donors, $20,000,000.

Clovis, Cal., gift of library by Andrew Carnegie, $7000.

Coburn Classical School, gift by various donors, $75,000.

Cocks, W. B., New York, will to charity, $15,000.

Colis, Harry C., Washington, D. C., gift to hospital, $10,000.

Collard, George W., New York, gift to church, $20,000.

Collard, Rev. Joseph, Worcester, Mass., gift to church, $6675.

College of Commerce, gift by Chamber of Commerce, $800,000; gift of unnamed donor, $700,000.

Collegiate Board of National Presbyterian Church, gift to Henry Kendall College, $5000.

Collins, Elizabeth, Philadelphia, Pa., will to charity, $5000.

Collins, T. D., Franklin, Pa., will to missions, $250,000.

Colorado College, gift by unnamed donor, $100,000.

Columbian World's Fair fund, devoted to charity, $94,000.

Columbia University, gift by George H. Hall, $15,000; by W. K. Vanderbilt, $113,750; by various donors, $46,195; will by Hugo Reisinger, $100,000; will by Jacob Langeloth, $5000.

Columbus Grove, Ohio, gift to church by various donors, $15,000.

Conrad, Anne F., Philadelphia, Pa., will to charity, $50,000.

Constantinople College, will by various donors, New York, $750,000.

Cooper Union, gift by Morris Loeb, $36,947.

Corcoran Gallery, gift by William A. Clark, $5000.

Corliss, B. F., White Plains, N. Y., will to charity, $5000.

Cornell Medical College, gift by various donors, $1,000,000.

Cornell University, will by A. D. Hermance, $400,000; unnamed donors, $150,000.

Corydon, Ind., gift of library by Andrew Carnegie, $7500.

Craft, Harriet O., Boston, Mass., will to charity, $50,000.

Craft, J. M., Crafton, Pa., will to charity, $875,000; to church, $15,000.

Cramer, Gustav, St. Louis, Mo., will to charity, $5000.

Crane, Charles R., Chicago, Ill., gift to University of Virginia, $10,000.

Crane estate to charity, Chicago, Ill., $2,125,000.

Crane Valve Company, Bridgeport, Conn., gift to employees, $100,000.

Crocker, Matilda H., Brookline, Mass., will to charity, $20,750; to Institute of Technology, $20,000.

Crosby, F. W., Chicago, will to art institute, $10,000; to charity, $10,000; to church, $5000; to Lake Forest College, $5000.

Crosby, Sarah H., New York, will to charity, $11,140.

Crozer, R. H., Upland, Pa., will to Crozer Theological Seminary, $110,000; to charity, $805,000.

Crozer Theological Seminary, will by R. H. Crozer, $110,000.

Cummings, Anna E., Portland, Me., will to charity, $7000; to educational institutions, $9000; to library, $10,000.

Cummings, Mary, will to Lehigh University, $327,500.

Curtis, Mrs. George R., Meriden, Conn., will to church, $17,000.

Curtis, Mary S., Brookline, Mass., will to charity, $5800; to church, $10,000.

Cutler, Mrs. A. A., New York, will to parks at Newburyport, Mass., $50,000; to charity, $1,500,000.

Cutler, H. T., New York, conditional bequest to charity, $85,000; conditional bequest to city of Newburg, $100,000.

Cutting, Frances J., Boston, Mass., will to charity, $35,000.

Dalton, Annie, Haverhill, N. H., will to charity, $25,000.

Darley, Francis T. S., Philadelphia, Pa., will to charity, $250,000.

Dartmouth College, gift by Abigail Bartlett, $10,000; gift by John E. Johnson, $30,000; gift of theatre by Wallace F. Robinson, $100,000; gift by various donors, $42,000.

Day, H. P., and E., Limsburg, Conn., gift to library, $25,000.

Day, Melville C., Florence, Italy, will to Phillips Andover Academy, $762,000.

Deering, James, Chicago, Ill., will to Northwestern University, $1,000,000.

Delaware College, gift by unnamed donor, $50,000.

Dennison, Letitia, Pittsburgh, Pa., will to church, $350,000; to charity, $125,000.

Denver University, gift by various donors, $250,000.

De Pauw University, gift by Mrs. B. D. Caldwell, $9100; will by Mabel F. Durham, $30,000.

Detroit general hospital, gift by Henry Ford, $3,000,000.

Dick, Susan, Carlinville, Ill., will to library, $15,000.

Diggins, F. A., Cadillac, Mich., will to Olivet College, $10,000.

Dimond, Johanna, Providence, R. I., will to charity, $30,000.

Disciples Divinity School, Chicago, Ill., gift by various donors, $50,000.

Dodge, Mrs. H. E., Detroit, Mich., gift to charity, $12,000.

Dodge City, Kan., will to city, $100,000.

Dohrman, F. W., San Francisco, Cal., will to charity, $84,000; to University of California, $5500.

Donohue, Isabelle, Philadelphia, Pa., will to charity, $6500.

Douglas, James, New York, gift to General Memorial Hospital, $100,000.

Dover, N. J., gift to library by Andrew Carnegie, $20,000.

Draper, Eben S., Worcester, Mass., will to charity, $104,000; will to church, $80,000; to Massachusetts Polytechnic Institute, $100,000.

Draper, Mary A. P., New York, will to Harvard University, $150,000; to charity, $450,000.

Drude, Louise L., Cincinnati, will to charity, $50,000.

Drury, Edward L., Stuttgart, Ark., gift to Vashti College, $25,000.

Dubuque German College, gift by Mrs. Cyrus McCormick, $60,000.

Duhring, Louis A., will to University of Pennsylvania, $1,500,000.

Duke, B. U., and J. S., New York, gift to church, $25,000.

Duke family, gift to Trinity College, $275,000.

Dunwoody, W. H., Minneapolis, Minn., will to Dunwoody Institute, $2,000,000; will to Society of Fine Arts, $1,000,000; will to charity, $1,850,000; to church, $850,000.

Dunwoody Institute, will by W. H. Dunwoody, $2,000,000.

Durham, Mabel F., will to De Pauw University, $30,000.

Eason, J. C., Eastover, S. C., will to charity, $75,000.

East Maine Seminary, gift by D. D. Stewart, $6000.

Eastus, John, Dexter, Me., will to town, $20,000.

Eccles, John, Norwich, Conn., will to charity, $166,000.

Eck, W. H., Pottstown, Pa., gift to hospital, $45,000.

Edmanson, J. D., Des Moines, Iowa, gift to Woman's Christian Association, $5000.

Education of boys, gift by Francis A. Ogden, $1,000,000.

Elgin, Ill., will for public baths by James R. Scanlan, $101,000.

Eliot, T. H., Richmond, Va., will to orphan asylum, $85,000.

Elkins, George W., gift to hospital, $20,000.

Elmira College, gift by Rockefeller foundation, $100,000.

Emery, Mrs. J. T., New York, gift to Packer Institute, $50,000.

Emery, Mrs. Mary, Cincinnati, Ohio, gift to Cincinnati Art Museum, $850,000; to Mechanics' Institute, $500,000; to Y. M. C. A., $111,217.

Endicott, William, Boston, Mass., will to Harvard University, $25,000; to Institute of Technology, $25,000; to Tuskegee Institute, $5000.

Epstein, Lena, New York, will to charity, $10,000.

Eubelin, F. E., Urbana, Ill., will to library, $10,000.

Euphrates College, will by Sarkis G. Telfeya, $15,000.

Eureka College, gift by R. A. Long, $275,000.

Evans, Mrs. R. D., Boston, Mass., gift to Fenway Gardens, $50,000.

Ewing, Nathaniel, Uniontown, Pa., will to Princeton University, $10,000; to church, $10,000.

Fahnestock, H. C., New York, will to charity, $415,000; to church, $25,000.

Fargo College, gift by various donors, $100,000.

Farrell, Sarah J., New York, will to charity, $52,000.

Fenway Gardens, gift by Mrs. R. D. Evans, $50,000.

Ferry, Mary D., Elizabethtown, Pa., will to charity, $5000.

Fetton, Samuel K., Philadelphia, Pa., will to church, $27,000.

Findlay College, gift by D. M. Hare, $5000.

Fletcher, Josiah M., Nashua, N. J., will to charity, $37,000.

Flint, Almena F., Boston, Mass., will to education, $13,000; to charity, $15,800.

Ford, Henry, Detroit, Mich., gift to Detroit general hospital, $3,000,000.

Ford Company, Detroit, Mich., gift to employees, $10,000,000.

Fordham College, gift by Mary V. McCusker, $8000.

Forrest, Emma L., Philadelphia, Pa., will to University of Pennsylvania, $10,000.

Franklin and Marshall College, by general education board, $30,000.

Fredericksburg, Md., gift to library by Z. B. Arts, $100,000.

Frick, H. C., New York, gift to McKinley Memorial, $50,000; to Salem fire sufferers, $25,000.

Fried, Sampson, New York, will to charity, $5000.

Friend, Nathan, will to charity, $8000.

Friends' Hospital, gift by Anna T. Jeane, $2,000,000.

Frisbie, J. F., Rochester, N. H., will to hospital, $25,000.

Gamble, Francesca N., Cincinnati, Ohio, will to charity, $245,000.

Garrett, Elizabeth M., Philadelphia, Pa., will for poor boys' farm, $434,235.

Gary, Elbert H., New York, gift to church, $50,000.

Genealogical Society, New York, gift by various donors, $55,000.

General Education Board to Franklin and Marshall College, $30,000; to Knox College, $100,000; to Washburn College, $100,000.

General Memorial Hospital, gift by James Douglas, $100,000.

General Synod Reformed Church to foreign missions, $250,000.

Gerscheidt, Henry M., New York, will to charities, $150,000.

Gibbons, Cardinal, gift to Catholic education, $300,000.

Giles, Stephen W., New York, will to charity, $5000.

Ginn, Edwin, Boston, Mass., will to world's peace fund, $2,000,000.

Glover, George H., Chicago, will to Museum of Fine Arts, $25,000; to church, $10,000; to charity, $107,000.

Godair, William H., will to charity, $400,000.

Goucher College, gift from Rockefeller foundation, $250,000.

Gould, Helen, New York, gift to Fortress Monroe Y. M. C. A., $35,000.

Grabfilder, Samuel, Philadelphia, Pa., gift to National Jewish Hospital, $350,000.

Grandor, Annie, Philadelphia, Pa., will to charity, $36,500.

Grant, John, Chicago, will to charity, $7000.

Green, Catharine, New York, will to church, $6000.

Greenawalt, Mrs. S. E., Springfield, Ohio, gift to Wittenberg College, $10,000.

Greendale, Mass., gift of library by Andrew Carnegie, $35,000.

Greenwood, Charles A., Boston, Mass., will to city, $40,000.

Greer, William J., Cincinnati, Ohio, will to charity, $13,500.

Griffith, Alfred P., Los Angeles, Cal., will to charity, $40,000.

Grinnell College, gift by Rockefeller foundation, $100,000; gift by various donors, $400,000.

Gunst, M. A., San Francisco, Cal., gift to charity, $10,000.

Gustavus Adolphus College, gift by Minnesota Swedish Evangelical Lutheran Conference, $250,000.

Hackley, Frances A., Tarrytown, N. Y., will to Hackley School, $800,000; will to church, $150,000; will to charity, $15,000; gift to education, $20,000.

Hackley School, will by Frances A. Hackley, $800,000.

Hahne, Mrs. L. H., New York, will to charity, $40,000.

Half Orphan Asylum, gift by Emil Chapin and family, $70,000.

Hall, Elizabeth S., Exeter, N. H., will to church, $26,000; to charity, $10,000.

Hall, George H., New York, will to Columbia University, $15,000.

Hamburg, N. Y., gift to library by Andrew Carnegie, $5000.

Hanover, Ky., College, gift by various donors, $100,000.

Happel, Lina V., New York, will to charity, $90,000; to Brooklyn Institute of Arts and Sciences, $250,000.

Hardy, Annie M., Pughtown, Pa., will to charity, $8000.

Hardy, Francis A., Chicago, Ill., gift for boys' home, $100,000.

Hare, D. M., Roaring Springs, gift to Findlay College, $5000.

Harries, Charles, St. Charles, Ill., will to Michael Reese Hospital, $200,000; to schools, $100,000.

Harriman, Mrs. E. H., New York, gift to Barnard College, $50,000; gift for school purposes, $35,000.

Harriot, Mary A., New York, will to charities, $125,000.

Hartley, Frank, New York, will to Bowdoin College, $25,000; to Princeton University, $265,420.

Hartshorn, W. U., Boston, Mass., gift to Northfield Seminary, $120,000.

Harvard University, gift by Rebecca W. Browne, $10,000; gift by Mrs. Adolphus Busch, $50,000; by J. C. Caldwallader, $25,000; by Morris Loeb, $500,000; by Nathaniel H. Stone, $50,000; will by J. A. Beebe, $170,000; by Mary A. P. Draper, $150,000; by William Endicott, $25,000; by Hugo Reisinger, $50,000; by Gardiner M. Lane, $250,000; by Morris Wymer, $400,000.

Harvey, Edward, Allentown, Pa., will to charity, $165,000

Hawkridge, Edwin, Exeter, N. H., will to charity, $7000.

Hawley, Anna M., Pughtown, Pa., will to hospital, $8000.

Hebrew Institute, gift by Adolph Lewisohn, $20,000.

Hebrew Technical School, gift by Adolph Lewisohn, $20,000.

Hebrew Technical Institute, gift by Morris Loeb, $73,447.

Henderson, Lucy, Newcastle, Pa., will to Jefferson College, $10,000.

Henry, Eliza A., Warren, Pa., will to missions, $55,000; to Park College, $10,000; to library, $5000.

Henry Kendall College, gift by E. R. Kemp, $25,000; gift by Collegiate Board of National Presbyterian Church, $5000.

Herman, George H., Houston, Tex., gift of park to city, $427,500.

Hermance, A. D., Williamsport, Pa., will to Cornell University, $400,000; to charity, $78,000.

Herr, Marie, Mt. Joy, Pa., will to church, $10,000.

Hildebrand, J. Z., York Pa., will to charity, $5000.

Hill, James J., St. Paul, Minn., gift to charity, $10,000; Rockefeller Institute, $50,000; St. Charles College, $60,000.

Hillman, Mrs. Joel, Washington, D. C., gift to charity, $10,000.

Hinkley, William, San Francisco, Cal., will to charity, $125,000.

Historical Association, gift by Phin M. Miller, $10,000.

Hobb, Eliza E., Waltham, Mass., will to charity, $9500.

Hobbs, James B., Chicago, Ill., will to charity, $300,000.

Hoey, John, Camden, N. J., will to charity, $60,000.

Holden, Liberty E., will to Western Reserve University, $1,000,000.

Holmes, L. A., Port Huron, Mich., gift to Y. M. C. A., $10,000.

Homeopathic Hospital, Philadelphia, Pa., gift by unnamed donor, $15,000.

Honolulu United Charities, will by William G. Irwin, $25,000.

Hooke, Henry M., Chicago, Ill., will to charity, $30,000; to church, $20,000.

Hooper, Mrs. G. W., San Francisco, Cal., gift to University of California, $2,000,000.

Hoover, George M., Dodge City, Kans., will to city, $100,000.

Horlick, William, Racine, Wis., gift to hospital, $50,000.

Hotchkiss, Mary A. F., will to Yale University, $750,000.

Houston, Tex., gift of park to city by George H. Herman, $427,500.

Howard, Bronson, New York, will to charity, $210,000.

Howard, H. W., Providence, R. I., will to charity, $341,000.

Howland, S. F., New York, will to charity, $15,500.

Hubbell, Silas P., Dayton Beach, Fla., will to church, $16,500.

Huber, Emelie, New York, will to charity, $50,000.

Hudson, Eliza H., Stamford, Conn., will to church, $23,000.

Illinois Wesleyan University, gift by Harris Buck, $200,000.

Institute of Technology, will by Matilda H. Crocker, $20,000; will by William Endicott, $25,000.

Irvine, J. H., Seattle, Wash., will to State Masonic Home, $150,000.

Irving, W. B., Philadelphia, Pa., will to University of Pennsylvania, $200,000.

Irwin, William G., San Francisco, Cal., will to United Charities, $25,000; to United Charities of Honolulu, $25,000.

Jackson, Schuyler B., Newark, N. J., will to Yale University, $7000; to schools, $6000; to charity, $25,000.

Jaquith, Elmira, Nashua, Mass., will to charity, $7000.

Jeanes, Anna T., Philadelphia, Pa., will to Friend's Hospital, $2,000,000.

Jefferson College, gift by Lucy Henderson, $10,000.

Jeffries, Elizabeth B., Philadelphia, Pa., will to charity, $65,000; to church, $39,000.

Jesup, Mrs. Morris K., New York, will to American Museum of Natural History, $5,000,000; to colleges, $1,340,000; to charities, $670,000; to museums, $250,000; to religious institutions, $700,000.

Jewish Charity Ball, Chicago, Ill., $10,000.

Johns Hopkins Hospital, gift by Rockefeller General Education Board, $1,500,000; will by Gardiner M. Lane, $100,000.

Johnson, John E., Hanover, N. H., gift to Dartmouth College, $80,000.

Johnson, O. T., gift to Occidental College, $100,000.

Johnson, Mr. and Mrs. O. T., Los Angeles, Cal., gift to charity, $50,000.

Jones, Martha S., Portsmouth, N. H., will to charity, $16,000.

Jordan, Michael, Logansport, Ind., will to charity, $5000.

Kaine, Joseph E., Bloomfield, N. J., will to charity, $35,000.

Kane, John L., New York, gift to charity, $8000.

Keith, B. F., New York, will to charity, $11,000.

Kelsey, Frederick, Nashua, Mass., will to church, $80,000.

Kemp, E. R., Tulsa, Okla., gift to Henry Kendall College, $5000.

Kepler, A. C., Lancaster, Pa., gift to Y. M. C. A., $15,000.

Kirkwood, Thomas E., Chicago, Ill., will to charity, $415,000.

Knights of Columbus, gift to Catholic University of Washington, $500,000.

Knox College, gift by General Board of Education, $100,000.

Kuntz, William E., Indianapolis, Ind., will to charity, $200,000.

Lafayette College, will by William Runkle, $100,000.

Lander family, gift to Yale University, $400,000.

Lane, Charlotte C., New York, will to church, $5,000; to charity, $20,000.

Lane, Gardner M., Boston, Mass., will to Harvard University, $250,000; Johns Hopkins University, $100,000.

Lane, Mary E., New York, will to charity, $50,000.

Lang, R. A., gift to Eureka College, $275,000.

Langeloth, Jacob, New York, will to charity, $55,000; to Columbia University, $5000; Metropolitan Museum of Art, $5000; to Langeloth, Pa., $150,000.

Langeloth, Pa., gift by Jacob Langeloth, $150,000.

Lauder family, New York, gift to Yale University, $75,000.

Lawrence, Mass., gift by Joseph Shattuck, $5000.

Lawrence, Phoebe E., New York, will to charity, $75,000.

Leckle, William A., Joplin, Mo., will to church, $40,000.

Lee, J. E., Norristown, Pa., will to church, $7500.

Leeds, Benjamin, Boston, Mass., will to charity, $325,000.

Le Fevre, Helen H., New York, gift to New York University, $10,000.

Leffingwell, C. W., gift to St. Albans School, Knoxville, Ill., $75,000.

Lehigh University, gift by Mary Cummings, $327,500; gift by Mrs. H. E. Packer, $75,000.

Leslie, Mrs. Frank, New York, will to suffrage, $800,000; to charity, $10,000.

Lewisohn, Adolph, New York, gift to Hebrew Institute, $20,000.

Limsburg, Conn., gift to library, by H. P. and E. Day, $25,000; gift to town by estate of C. H. Wooster, $57,000.

Lincoln Institute, will by Lucy Belknap, $20,000.

Lincoln Park, Chicago, gift by unnamed donor, $23,000.

Loeb, Morris, New York, will to Harvard University, $500,000; to charity, $395,841; Smithsonian Institute, $36,947; Metropolitan Museum of Art, $36,947; American Museum of Natural History, $36,947; Hebrew Technical Institute, $73,447.

Lutz, William, Philadelphia, Pa., will to hospital, $5000.

McCleod, P. H., Florence, S. C., gift to charity, $25,000.

McCormick, Mrs. Cyrus, Chicago, gift to Dubuque German College, $60,000.

McCormick, Nettie M., Chicago, Ill., gift to Y. M. C. A., $50,000.

McCulloch, John E., Baltimore, Md., will to charity, $250,000.

McCusker, Mary V., New York, will to Fordham College, $8,000.

McDonald, John, Center Junction, Iowa, will to charity, $125,000.

McDowell, Anna C., White Plains, N. Y., will to charity, $10,000.

McGlenchy, Alice, Philadelphia, Pa., will to church, $5600.

McGregor, James, Salt Lake City, Utah, will to University of Utah, $50,000.

McKay, Alexander A., Chicago, Ill., will to Art Institute, $100,000; to charity, $200,000.

McKeesport Tinplate Company, McKeesport, Pa., gift to hospital, $5000.

McKinley, W. B., Champaign, Ill., gift to University of Illinois, $14,000.

Macon, Ga., will of park to city by A. O. Bacon, $110,000.

Marley, Amelia, New Brunswick, N. J., will to charity, $100,000.

Martin, Francis J., Chelsea, Mass., will to church, $7000.

Martin, Frederick T., New York, will to charity, $10,000.

Martin, J. C., New York, will to missions, $1,000,000.

Masonic Home, Seattle, Wash., will by J. H. Irvine, $150,000.

Mass. General Hospital, will by Nathaniel Thayer, $50,000.

Mass. Humane Society, gift by various donors, $10,417.

Mass. Institute of Technology, will by Nathaniel Thayer, $50,000; by Horace W. Wadleigh, $125,000.

Mass. Polytechnic Institute, gift by Eben S. Draper, $100,000.

Maxwell, Mary, New York, will to charity, $30,000.

Mechanics' Institute, gift by Mrs. Mary M. Emery, $500,000.

Medford, Wis., gift of library by Andrew Carnegie, $6000.

Merritt, Samuel E., Port Chester, N. Y., will of cemetery to town, $3,000,000.

Methodist Board of Missions, gift by unnamed donor, $175,000.

Methodist Church, South Missions, gift by various donors, $200,000.

Methodist Educational Institutions, gift by various donors, $950,000.

Methodist University, gift by Asa Candler, $1,000,000.

Metropolitan Museum of Art, gift by J. C. Cadwallader, $25,000; gift by Jacob Langeloth, $5000; gift by Morris Loeb, $36,947.

Meyer, Edwin F., Chicago, Ill., gift to Michael Reese Hospital, $15,000.

Michael Reese Hospital, gift by Edwin F. Meyer, $15,000; by Mr. and Mrs. J. H. Selz, $10,000; will by Charles Harries, $100,000.

Miller, Phin M., Jamestown, N. Y., gift to Historical Association, $10,000.

Milton College, gift by various donors, $10,000.

Minneapolis, Minn., gift to associated charities by various donors, $55,000.

Minnesota College, gift by Minnesota Swedish Evangelical Lutheran Conference, $129,000; gift by various donors, $5000.

Minnesota Swedish Evangelical Lutheran Conference, gift to Minnesota College, $129,000; to Gustavus Adolphus College, $250,000.

Mitchell, Mrs. M. C., Philadelphia, Pa., will to charity, $5000.

Mitchell, Mrs. S. Weir, Philadelphia, Pa., will to charity, $5000.

Monmouth College, will by David M. Ure, $23,750.

Montana Building, Panama Exposition, gift by W. M. Clark, $10,000.

Moody Northfield School, gift by unnamed donor, $150,000.

Moore, Sarah J., Springfield, Mass., will to charity, $26,000; to church, $10,000; to library, $8000.

Mooresville, Ind., gift of library by Andrew Carnege, $10,000.

Morgan, J. Pierpont, Jr., New York, gift to police pension fund, $1,000.

Morningside College, gift by various donors, $60,000.

Mt. Airy Seminary, gift by Helen G. Bowen, $20,000.

Mt. St. Mary's College, will by Julian Reich, $80,000.

Muir, J. G., Pottsville, Pa., will to charity, $78,000.

Museum of Fine Arts, will by George H. Glover, $25,000; by Horace W. Wadleigh, $125,000.

Nanson, John, Springfield, Mass., will to charity, $5000.

National Geographical Society, gift to Yale University, $7275.

National Jewish Hospital, gift by Samuel Grabfilder, $350,000.

National Protestant Episcopal Cathedral, gift by unnamed donor, $500,000.

National Tube Company, McKeesport, Pa., gift to hospital, $10,000.

Nesmith, John, Lowell, Mass., will to charity, $60,000.

Neuberg, Benno, New York, will to charity, $16,500.

Nevil, George W., Philadelphia, Pa., gift to hospital $5000; to hospital for incurables, $7000.

Newburg, conditional bequest by H. T. Cutler, $100,000.

Newburyport, Mass., will to parks by Mrs. A. G. Cutler, $50,000.

Newcomb, H. R., Cleveland, O., will to charity, $80,000.

New Hampshire Agricultural College, gift by Richard Scammon, $5000.

New Haven, Conn., gift of library by Andrew Carnegie, $60,000.

Newton, Elisabeth, Fredonia, N. Y., will for hospital, $150,000.

New York, gift for playground by unnamed donor, $10,000; gift to hospital by various donors, $15,000.

New York Association for the Blind, gift by various donors, $100,000.

New York Lighthouse for Blind, gift by unnamed donor, $60,000.

New York University, gift by Helen H. Le Fevre, $10,000.

N. Y. Zoölogical Park, gift by Andrew Carnegie, $100,000.

N. Y. Zoölogical Society, gift by J. C. Cadwallader, $20,000.

Newton, Mass., gift to church by unnamed donor, $9000.

Nichols, James E., New York., will to library, $25,000; to church, $10,000; to charity, $10,000.

Nickerson, S. M., Chicago, Ill., will to Art Institute, $25,000.

Noe, Nellie M., New York, will to charity, $8000.

Northern Baptist Convention, gift by J. D. Rockefeller, $50,000; by unnamed donor, Boston, Mass., $5000.

Northfield Seminary, gift by Frank Wood, $10,000; will by Julia Billings, $40,000; gift by W. U. Hartshorn, $120,000.

Northwestern University, will by James Deering, $1,000,000.

Oakland, Cal., gift of branch libraries by Andrew Carnegie, $140,000.

Oberly, H. H., Elizabeth, N. J., will to church, $105,000; to charity, $7000; to Trinity College, $5000.

O'Brien, Annie M., Philadelphia, Pa., will to charity, $10,000.

Occidental College, gift by O. T. Johnson, $100,000.

Ogden, Francis A., Houston, Tex., will for education of boys, $1,000,000.

Olivet College, will by F. A. Diggins, $10,000.

Orr, Alexander E., New York, will to church, $50,000.

Otto, Eliza, Philadelphia, Pa., will to charity, $20,000.

Packer, Mrs. H. E., gift to Lehigh University, $75,000.

Packer, William M., Philadelphia, Pa., will to Lehigh Pa., $800,000.

Packer Institute, gift by Mrs. J. T. Emery, $50,000; by Mrs. Thomas Emory, $50,000.

Painter, J. W., McKeesport, Pa., gift to hospital, $10,000.

Palmer, Edgar, gift of stadium to Princeton University, $300,000.

Palmer, Emma H., Philadelphia, Pa., will to charity, $13,500.

Palmer, W. B., St. Louis, Mo., will to church, $60,000; to Central Female College, $40,000.

Paris, Catharine, New York, will to charity, $58,000; to Catholic High School, $30,000.

Park College, will by Eliza A. Henry, $10,000.

Parker, Arthur M., Detroit, Mich., will to charity, $10,000.

Peace Fund, gift by Edwin Finn, $1,000,000.

Peaslee, Hannah L., Amesbury, Mass., will to church, $5000.

Penfold, W. H., New York, will to charity, $1,150,000.

Penn College, will by Martha Riley, $42,000.

Pennsylvania University, will by Louis A. Duhring, $1,500,000.

Perry, Mrs. William H., Bridgeport, Conn., will to charity, $25,000.

Pevear, H. A., Lynn, Mass., will to church, $7000; to charity, $12,000.

Philadelphia, Pa., gift to church by various donors, $8200.

Philadelphia Alumni, gift to Brown University, $10,000.

Philadelphia Hospital for Incurables, gift by George W. Nevil, $7000.

Philadelphia Theological Seminary of St. Charles Borromeo, gift by various donors, $74,202.

Phillips Andover Academy, will by Melville C. Day, $762,000.

Phillips Exeter Academy, will by George S. Snyder, $20,000.

Phipps, Henry, gift for radium institute, $15,000,000; gift to various institutions, $15,000,000.

Pittsburgh, Pa., gift to charity by various donors, $60,000.

Pittsburgh Carnegie Institution, gift by Andrew Carnegie, $2,000,000.

Poland, Wheeler, Winchendon, Mass., will to charity, $60,000.

Port Chester, N. Y., gift to hospital by various donors, $112,300; will of cemetery to town by Samuel E. Merritt, $3,000,000.

Pound, Jennie, Middletown, New York, will to charity, $7000.

Price, Mrs. A. C., Morgantown, W. Va., will to W. C. T. U., $20,000.

Princeton University, gift by J. C. Cadwallader, $25,000; gift of stadium by Edgar Palmer, $300,000; by various donors, $80,000; will by Nathaniel Ewing, $10,000; will by Frank Hartley, $265,420; will by Ferris S. Thompson, $1,500,000.

Proctor, Mary B., Boston, Mass., will to charity, $75,000.

Promotion of international peace, gift to churches for, by Andrew Carnegie, $2,000,000.

Quirk, Samuel M., Ypsilanti, Mich., gift to city, $25,000.

Radium institute, gift by Henry Phipps, $15,000,000.

Reed, Verner Z., Denver, Colo., gift to charity, $50,000.

Reich, Julien, Tryon, N. C., will to Mt. St. Mary's College, $80,000.

Reisinger, Hugo, New York, will to Columbia University, $100,000; to Harvard University, $50,000; to art museum, $150,000; to charity, $100,000.

Rennselaer Polytechnic Institute, gift by Mrs. Russell Sage, $30,000.

Richard, Catherine, Philadelphia, Pa., will to charity, $750,000.

Richardson, Charles W., Salem, Mass., will to charity, $25,000.

Riley, Martha, Marshalltown, Iowa, will to Penn College, $42,000.

Ritchie, Sarah E., Glen Cove, L. I., will to Y. W. C. A., $10,000.

Ritter, Betsy, New Haven, Conn., will to church, $52,000.

Roberts, H. E., Boston, Mass., will to charity, $75,500.

Robinson, Wallace F., gift of theatre to Dartmouth College, $100,000.

Rockefeller, J. D., gift to Ann Arbor (Mich.) Y. M. C. A., $60,000; to Brooklyn Y. M. C. A., $300,000; to Bulgarian sufferers, $10,000; to charity, $76,000; to church, $7000; to Columbus, (O.) Y. M. C. A., $36,244; to Northern Baptist Convention, $50,000; to Rockefeller Institute, $3,550,000; to Springfield, Mass. Medical College, $50,000; to Western Reserve University, $250,000; to White Plains, N. Y., Y. M. C. A., $5,000; to Y. M. C. A., $72,000.

Rockefeller Foundation, gift to American Academy, Rome, $10,000; to Goucher College, $250,000; to charity, $245,000; to college for farming demonstration, $1,400,000; to Elmira College, $100,000; to Grinnell College, $100,000; to Wellesley College, $750,000.

Rockefeller General Education Board, to Johns Hopkins Hospital, $1,500,000.

Rockefeller Institute, gift by James J. Hill, $50,000; gift by J. D. Rockefeller, $3,550,000.

Rockford College, gift by Andrew Carnegie, $35,000.

Rogers, George W., Elizabeth, N. J., will to church, $5000.

Rosenwald, Julius, Chicago, Ill., gift to charity, $17,000; to colored Y. M. C. A., $150,000; gift of country club to social workers, $50,000.

Runkle, William, Orange, N. J., will to Lafayette College, $100,000; to church, $125,000; to charity, $10,000.

Russell, Mrs. A. D., Princeton, N. J., gift to church, $500,000.

Sadgebury, James, Arlington, Mass., will to charity, $100,000.

Sage, Mrs. Russell, New York, gift Bird Protection Society, $10,000; to Rensselaer Polytechnic Institute, $30,000.

St. Albans School, Knoxville, Ill., gift by C. W. Leffingwell, $75,000.

St. Benedict College, Atchison, Kan., gift by various donors, $50,000.

St. Charles College, gift by James J. Hill, $60,000.

St. Francis Technical School, San Francisco, Cal., gift by various donors, $50,000.

St. Louis University, conditional bequest for hospital by Thomas Campbell, $40,000,000.

St. Paul, Minn., gift for branch libraries, by Andrew Carnegie, $75,000.

St. Stephen's College, gift by various donors, $70,195.

Salem, Mass., Fire Fund, total gifts, $600,695.

Salem Fire Fund, gift by various donors, $358,681.

Salem Fire Sufferers, gift by H. C. Frick, $25,000.

Salina, Kan., gift to church by various donors, $23,000.

Salvation Army, gift by unnamed donor, New York, $100,000.

San Anselmo, Cal., gift of library by Andrew Carnegie, $10,000.

Sands, Henry M., New York, will to hospital, $7500.

Sanford, W. P., New York, will to charity, $50,000.

Sayres, William, New Junction, Colo., will to Socialism, $20,000.

Scammon, Richard, Stratham, N. H., to New Hampshire Agricultural College, $5000.

Scanlon, James R., Elgin, Ill., will for public baths, $101,000.

Schiff, Jacob H., New York, gift to charity, $40,000.

Schwab, Charles M., Bethlehem, Pa., gift to band hall, $100,000.

Scott, Marie, Niles, Cal., gift to Y. W. C. A., $25,000.

Seabury, Caroline O., New Bedford, Mass., will to charity, $15,000.

Sears, Francis B., Boston, Mass., will to charity, $5500.

Selz, Mr. and Mrs. J. H., Chicago, Ill., gift to Michael Reese Hospital, $10,000.

Semple, Mary E., Pittsburgh, Pa., will to charity, $50,000.

Senff, Mrs. C. H., New York, gift to University of Virginia, $15,000.

Shank, J. W., South Pasadena, Cal., will to church, $10,000.

Shardlow, Joseph, New York, will to church, $5000.

Shattuck, Joseph, gift to Lawrence, Mass., $5000.

Sheffield-Yale Scientific School, gift by unnamed donor, $100,000.

Sheppard sisters, Camden, N. J., will to charity, $6000.

Sherman, Mary E. P., Bridgeport, Conn., will to church, $60,000.

Shippen, Elizabeth F., Philadelphia, Pa., will to University of Pennsylvania, $25,000; to Bryn Mawr College, $10,000; to charity, $1,966,000.

Shoemaker, E. W., Bridgeton, N. Y., will to charity, $10,000; to church, $80,000; training school, $10,000; to library, $5000.

Shonts, Theodore P., Des Moines, Iowa, gift to Drake University, $25,000.

Slattery, Margaret M., New York, will to library, $5000; to charity, $5000.

Slimmer, Alexander, Dubuque, Iowa, gift to hospital, $5000.

Smith, Byron L., Chicago, Ill., will to charity, $200,000; to employees, $100,000.

Smith, Edwin K., New York, will to Bowdoin College, $500,000.

Smith, George W. N., gift of art collection to Springfield, Mass., library, $1,000,000.

Smith, Hannah, Quincy, Mich., gift to hospital, $25,000.

Smith, Mary J., Santa Ana, Cal., will to charity, $25,000.

Smith, Thomas J., Champaign, Ill., gift to University of Illinois, $200,000.

Smithsonian Institution, gift by Morris Loeb, $36,947.

Snow, R. S., Cambridge, Mass., will to church, $14,000.

Snydam, Lambert, New York, gift for cancer research, $25,000.

Snyder, George S., New York, will to Bangor Library, $5000; to Bowdoin College, $10,000; to Phillips Exeter Academy, $20,000.

Snyder, N. W., Sunbury, Pa., will to church, $7000.

Socialism, will by William Sayres, $20,000.

Society of Fine Arts, will by W. H. Dunwoody, $100,000.

Soren, George W., New York, will to charity, $20,024.

Southwestern University, gift by various donors, $11,000.

Springfield, Mass., gift of art collection to library by George W. N. Smith, $1,000,000.

Springfield, Mass., Medical College, gift by J. D. Rockefeller, $50,000.

Stewart, David D., St. Albans, Me., gift to charities, $130,000; gift to church, $15,000; gift to education, $85,000; to East Maine Seminary, $6000.

Stillwell, Homer A., Chicago, gift to University of Illinois, $25,000.

Stone, Nathaniel H., gift to Harvard University, $50,000.

Strathcona, Lord, London, will to Yale University, $500,000.

Suffrage, Woman, will by Mrs. Frank Leslie, $800,000; gift by Mrs. O. H. P. Belmont, $5000; gift by unnamed donor, $15,000.

Sullivan, T. T., Salina, Kan., will to church, $8000.

Summit, N. J., gift by various donors, $100,000.

Taddock, Mrs. M. C., Oakland, Cal., will to charity, $20,000.

Taft, Mr. and Mrs. Charles P., Cincinnati, Ohio, gift to Y. M. C. A., $25,000.

Tag day, Chicago, Ill., gift to charity, $46,000.

Telfeya, Sarkis A., New York, will to church, $60,000; to Turkish schools, $15,000; to Anatolia College, $10,000; to Euphrates College, $15,000.

Tenney, Annie S., Portland, Me., will to charity, $10,000; to Society of Nat. History, $6000; to Y. M. C. A., $5000.

Thalmann, E., New York, will to charity, $25,000.

Thayer, Nathaniel, Lancaster, Mass., will to Boston Museum of Fine Arts, $150,000; to Mass. Institute of Technology, $50,000; Mass. General Hospital, $50,000.

Thomas, Mrs. Milton, Los Angeles, Cal., gift to charity, $25,000.

Thompson, Elizabeth, New York, will to charities, $750,000.

Thompson, Ferris S., Paris, will to Brown University, $1,500,000; to charity, $218,188; to church, $50,000; to Princeton University, $1,500,000.

Thorndike, George L., Boston, Mass., will to charity, $300,000.

Tier, Christian A., New York, will to church, $28,390.

Torrey, Elbridge, Boston, Mass., will to charity, $70,000.

Tourtelotte, Jacob F., Minneapolis, Minn., will to Tourtelotte Institute, $600,000.

Tourtelotte Institute, will by Jacob F. Tourtelotte, $600,000.

Travers, Bridget, Philadelphia, Pa., will to charities, $5000.

Trinity College, gift by Duke family, $275,000; will by H. H. Oberly, $5000.

Turkish schools, will by Sarkis A. Telfeya, $15,000.

Tuskegee Institute, will by William Endicott, $5000.

United Charities, will by William G. Irwin, $25,000.

United Kingdom, trust gift by Andrew Carnegie, $10,000,000.

University of California, will by F. W. Dohrman, $5500; by W. J. Young, $25,000.

University of Illinois, gift by W. B. Champaign, $14,000; by Thomas J. Smith, $200,000; by Homer A. Stillwell, $25,000.

University of Pennsylvania, gift by Louis A. Duhring, $1,500,000; will by Emma L. Forest, $10,000; will by W. B. Irving, $200,000; gift by Elizabeth F. Shippen, $25,000.

University of Pittsburgh, gift by unnamed donor, $50,000.

University of Rochester, will by Josephine M. Clarkson, $7000.

University of Utah, gift by James McGregor, $50,000.

University of Vermont, gift by unnamed donor, $10,000.

University of Virginia, gift by Charles R. Crane, $10,000; gift by Mrs. C. H. Senff, $15,000.

Urbana, Ill., will to library by F. E. Eubelin, $10,000.

Ure, David M., Pittsburgh, Pa., will to church, $50,152; to Monmouth College, $28,750.

Ursinus College, gift by various donors, $100,711.

Vanderbilt, L. W., New York, gift to Yale University, $100,000.

Vanderbilt, W. K., New York, gift to Columbia University, $113,750.

Van Wagoner, Mary L., New York, will to charity, $83,000.

Vashti College, gift by Edward L. Drury, $25,000.

Wadleigh, Horace W., will to Museum of Fine Arts, $125,000; Massachusetts Institute of Technology, $125,000; charity, $141,000.

Wallach, David, Chicago, Ill., gift of fountain to city, $5000.

Warschauer, Harry, New York, will to charity, $17,000.

Walters, William C., Philadelphia, Pa., will to charity, $15,000.

Washburn College, gift by General Board of Education, $100,000.

Washington Traction Company, Washington, D. C., gift to employees, $30,000.

Washington University, gift by Carnegie Education Board, $750,000.

Watrous, Juliette, Washington, D. C., will to church, $8000.

Watt, Jackson A., Oxford, Pa., gift to hospital, $6,000.

Webb, Mrs. B. F., New York, will to charity, $200,000; to church, $10,000.

Wedeles, Julia, Chicago, Ill., will to charity, $25,700.

Wellesley College, gift by Rockefeller Foundation, $750,000; unnamed donor, $100,000; various donors, $9348.

West Alles, Wis., gift of library by Andrew Carnegie, $10,000.

Western Reserve University, will by Liberty E. Holden, $1,000,000; gift by J. D. Rockefeller, $250,000.

Westfall, Mary B., Dayton, O., will to charity, $15,000.

White, Alfred L., New York, will to Y. W. C. A., $5000.

White, Joseph M., Winchester, Mass., gift to charities, $50,000.

Whiteknight, Charles H., Philadelphia, Pa., will to charity, $5000.

Widener, George D., Ogontz, Pa., gift to hospital, $6000.

Wiese, William, New York, will to charity, $10,000.

Wilder, Mary C., Ashby, Mass., will to charity, $8,000.

Wittenberg College, gift by Mrs. S. E. Greenawalt, $10,000.

Wolf children, New York, gift to charity, $25,000.

Wolverton, W. H., Augusta, Ga., will to library, $25,000.

Woman's Christian Association, gift by J. D. Edmanson, $5000.

W. C. T. U., will by Mrs. A. C. Price, $20,000.

Woman's Medical College, Philadelphia, Pa., gift by unnamed donor, $10,000.

Wood, Frank, Boston, Mass., will to charity, $75,000; to college, $40,000; to church, $45,000; to Northfield Seminary, $40,000.

Wooster, estate of C. H., Limsburg, Conn., gift to town, $57,000.

Worley, Kate, Philadelphia, Pa., will to charity, $68,000.

Wright, Joseph, Philadelphia, Pa., will to charity, $15,000.

Wright, W. G., San Bernardino, Cal., will to charity, $10,000.

Wyatt, Fair, Montgomery, Ala., will to charity, $40,000.

Wymer, Morris, Cambridge, Mass., will to Harvard University, $400,000.

Yale Divinity School, gift by various donors, $350,000.

Yale University, gift by Brady family, $625,000; gift by Martha F. Byler, $10,000; by Mary A. F. Hotchkiss, $750,000; by the Lander family, $400,000; by the Lauder family, $75,000; by National Geographic Society, $7275; by other donors, $8000; gift by Strathcona estate, $11,000; by L. W. Vanderbilt, $100,000; will by Schuyler B. Jackson, $7000; will by Lord Strathcona, $500,000.

Yankton College, gift by various donors, $50,000.

Yoerb, Nettie, Sterling, Ill., gift to church, $10,000.

Young, W. J., Barnwell, S. C., gift to University of Georgia, $25,000.

Y. M. C. A., gift by Mrs. Mary M. Emery, $50,000; by Helen Gould, $35,000; by L. A. Holmes, $10,000; by J. D. Rockefeller, $72,000; by Nettie M. McCormick, $50,000; will by Annie S. Tenney, $5000.

Y. M. C. A., Ann Arbor (Mich.), gift by J. D. Rockefeller, $60,000; Baltimore, Md., gift by various donors, $400,000; Bellwood, Pa., gift by various donors, $7870; Brooklyn, gift by J. D. Rockefeller, $300,000; Cincinnati, O., gift by Mr. and Mrs. Taft, $25,000; gift by Mrs. May Emery, $61,217; gift by other donors, $408,873; Springfield, Mass., gift by J. D. Rockefeller, $50,000; Columbus O., gift by J. D. Rockefeller, $36,244; Lancaster, Pa., gift by A. C. Kepler, $15,000; by various donors, $86,500; Los Angeles, Cal., gift by various donors, $20,000; New London, Conn., gift by various donors, $100,000; Pasadena, Cal., by various donors, $15,000; Plainfield, N. J., gift by various donors, $12,000; Staunton, Va., gift by various donors, $54,000; Stroudsburg, Pa., gift by various donors, $50,000; Van Wert, O., gift by various donors, $5000; White Plains, N. Y., gift by J. D. Rockefeller, $5000; Y. M. C. A., colored, gift by Julius Rosenwald, $150,000.

Y. W. C. A., gift by Marie Niles, $25,000; will by Sarah E. Ritchie, $10,000; will by Alfred E. White, $5000.

Ypsilanti, Mich., gift to city by Samuel M. Quirk, $25,000.

GILL, SIR DAVID. A Scotch astronomer, died

Jan. 24, 1914. He was born in 1843 at Aberdeen, Scotland, and was educated at Marischal College, and the University of Aberdeen. His earliest labors in astronomy were devoted to the study of the sun. Previous to his researches the accredited method for determining the sun's distance was to observe transits of Venus; and Gill, who was then director of the private observatory of Lord Lindsay at Dunecht, organized Lord Lindsay's Transit of Venus Expedition to the island of Mauritius in 1874. The results of the expedition were disappointing, and Gill turned to another method, the development of which gave successfully the sun's distance with satisfactory accuracy. He utilized the favorable opposition of the planet Mars in 1877 to make observations of its position with a heliometer from a station near the equator. The earth's rotation would carry the observer from one viewpoint to another during the night, thus affording a basis for calculations of the planet's distance. The experiments were conducted on the island of Ascension, and were entirely successful. They paved the way for further successes with a larger instrument, and with a somewhat different plan of work. After this expedition, Gill was appointed astronomer at the Cape of Good Hope, and under his direction from 1879 to 1906, the Cape Observatory advanced to the front rank. His personal work consisted first in confirming and correcting the result for the sun's distance, and afterwards in obtaining as accurately as possible the distance of those stars which were suspected of being nearest to the earth. His photographs of the Great Comet of 1882 revealed the possibility of employing photography for mapping the stars, and in 1885 he began his *Cape Photographic Durchmusterung*. The task of measuring the photographs, which was undertaken by Professor Kapteyn of Groningen, was completed in 1900, and as a result of the coöperation of the two astronomers, we have a comprehensive survey of the southern sky from 19° S. declination, containing more than 450,000 stars. From this important work sprang directly the execution of the International Star Chart and Catalogue, which is still in progress. During the last years of his directorship at the Cape Observatory, he carried on a series of successful experiments with a large telescope which was fitted with an elaborate spectroscopic apparatus. With this instrument it was possible to attack the problem of the sun's distance by determining the velocity with which the earth moves around it. This determination, completed very soon after Sir David Gill's retirement in 1907, confirmed the direct determination with the heliometer which he had made years before. He published much on astronomical subjects, and his writings are of great authority. He was knighted in 1900. The Universities of Aberdeen and Edinburgh conferred upon him the degree of LL.D. Degrees were also conferred by the Universities of Oxford, Dublin, and Cambridge. He was a member of many scientific societies, and received medals from astronomical and other bodies in recognition of his work. In 1907 he was president of the British Association.

GILLETT, William Kendall. An American scholar and educator, died Sept. 28, 1914. He was born in New York City in 1860, and graduated from New York University in 1880. He afterwards studied at the Columbia Law School, at the University of Berlin, and at the University of Paris, and carried on approved studies in Paris, Geneva, Florence, Madrid, and Seville. From 1885 to 1888 he was instructor in French and German at Lehigh University. From 1890 until the time of his death he was professor of Romance languages on the undergraduate and graduate faculties of New York University, and from 1902–09 was chairman of the committee on college organizations. He was at the same time curator of the New York University Historical Society and a member of several other learned societies.

GINSBURG, Christian David. An English Hebraist, died March 9, 1914. He was born in Liverpool in 1831. When he was 26 years of age he published historical and critical commentaries on *Ecclesiastes* and the *Song of Songs*. This was followed by many other books. The great work of his life, however, was the publication and explanation of the *Massorah*. Another of his books of great value was the *Introduction to the Hebrew Bible*. The learning and labor which underlie all his publications, but especially those dealing with the *Massorah*, are amazing; and Hebrew scholars owe to him an immense debt for the almost exhaustive completeness with which he has made the Massorctic material at present known accessible to them. He was appointed in 1870 to undertake the revision of the Old Testament. He also contributed many articles to various Bible dictionaries and encyclopædias, published in recent years.

GIRARD, Alfred Conrad. An American soldier and surgeon, died Jan. 3, 1914. He was born in Switzerland in 1841, and graduated from the University of Würzburg in 1864. In 1865 he removed to the United States and entered the army as acting assistant surgeon. He was promoted successively until he became colonel and assistant surgeon-general, in 1902. In 1905 he was made brigadier-general and in the same year was retired at his own request. From 1867 to 1882 he served in the Departments of Louisiana and Texas. He afterwards visited hospitals in Europe and published the first report in the United States advocating antiseptic surgery. For eight years following he served on the frontier in campaigns against the Indians, and after another trip to Europe published an atlas of clinical microscopy. During the Spanish-American War he was chief surgeon of the second army corps and at its close equipped the General Hospital at the Presidio, Cal. For one year he served as chief surgeon in the Department of Luzon, in the Department of the Philippines. He was then chief surgeon of the Department of California. After his retirement he served for a time as reference librarian of the John Crerar Library at Chicago, and afterwards represented this library in Washington. He contributed articles on medical subjects to medical journals.

GOBAT, Charles Albert. A Swiss peace advocate, died March 16, 1914. He was born in the Canton of Bern in 1843. He practiced law and in 1882 was elected to the Great Council of Bern. Most of his life was devoted to the cause of international peace. In 1902 he divided the Nobel peace prize with E. Ducommun. In 1904 he visited the United States and attended the Interparliamentary Conference at St. Louis. In the same year he formally asked the United States to intervene in the Russo-Japanese War

At the time of his death he was president of the International Peace Bureau, and administrator of the Interparliamentary Union.

GOEBEN, THE. See GERMANY, *Navy*; and NAVAL PROGRESS.

GOETHALS, COL. G. W. See PANAMA CANAL, *passim*.

GOETHE LITERATURE. See GERMAN LITERATURE.

GOLD. The total production of gold in the mines of the United States in 1913 was 4,299,784 fine ounces. This, at a value of $20.67 per fine ounce, was valued at a total of $88,884,400. The production in 1912 was 4,520,717 fine ounces, valued at $93,451,500. There was less gold produced in 1913 than in any year since 1905. The maximum production was in 1909, when it was valued at $94,560,000. California was the first State in the production of gold in 1913, with 979,174 fine ounces, valued at $20,241,300. Colorado was second, with 876,057 fine ounces, valued at $18,109,700; Alaska third, with 735,364 fine ounces, valued at $15,201,300; and Nevada fourth, with 579,408 ounces, valued at $11,977,400. Further details in regard to the production in these and other gold-producing States will be found in the paragraphs on *Mineral Production* under these States. The accompanying table gives the value of the production in 1912–14.

GOLD PRODUCTION IN UNITED STATES.
(*Values*)

State	*1912*	*1913*	*1914**
Alabama	$16,400	$9,200	$12,200
Alaska	17,198,600	15,201,300	15,350,000
Arizona	3,785,400	4,101,400	4,507,800
California ..	20,008,000	20,241,300	21,447,800
Colorado	18,741,200	18,109,700	19,881,000
Georgia	10,900	13,800	11,400
Idaho	1,401,700	1,244,300	1,066,000
Maryland	1,200	700	....
Montana	3,707,900	3,320,900	3,935,100
Nevada	13,575,700	11,977,400	11,003,800
New Mexico .	754,600	892,000	1,207,600
N. Carolina .	156,000	115,200	118,900
Oregon	759,700	1,477,900	1,594,500
S. Carolina .	15,400	4,100	6,100
S. Dakota ..	7,823,700	7,214,200	7,810,000
Tennessee ...	11,500	7,700	5,900
Texas	2,200	200	10,300
Utah	4,312,600	3,570,800	3,180,200
Washington .	682,600	657,500	607,400
Wyoming ...	24,300	17,500	2,200
Continental U. S.	$92,989,900	$88,176,100	$91,760,800
Philippines ..	461,600	707,200	1,060,100
Porto Rico ..	......	1,000	3,100
Total ...	93,451,500	88,884,400	92,823,500

* Preliminary estimates of Director of the Mint.

The total number of mines producing gold in 1913 was 5276. Of these, 3502 were deep mines, and 1774 were placer mines. With few exceptions all the mines producing gold produced also silver, copper, lead, and zinc. The number of mines shows a net total decrease over 1912 of 335 producing mines. The number of placers decreased by 270, and the number of deep mines by 65. In the total number of operating mines, Colorado was first with 858, followed by California with 796, Nevada with 786, and Alaska with 737. In the number of placer mines, Alaska led with 700, followed by California with 386, Idaho with 196, and Montana and Oregon with 128 each. In deep mines Colorado led with 829, followed by Nevada with 722, Montana with 430, California with 410, and Arizona with 402.

The great bulk of the domestic gold output is from dry or siliceous ores and from placers. Over 91 per cent of the total production comes from these sources. The total contribution of gold derived from the great copper, lead, and zinc mines of the country is therefore relatively small. The total value of the gold placer production in 1913 was $22,238,424, compared with $23,019,633 in 1912. From dry and siliceous ores was obtained gold valued at $59,222,751, compared with $62,111,916 in 1912.

IMPORTS AND EXPORTS. The imports of gold in 1913 amounted to $63,704,832, and the exports to $91,798,610. Of the imports, $30,163,682 was in foreign bullion, refined; $16,088,053 in United States coin; $12,086,204 in foreign ore and base bullion; and $5,366,893 in foreign coin. Of the exports, $46,139,054 was in domestic bullion, refined; $44,547,670 in United States coin; $602,781 in domestic ore and base bullion; and $508,604 in foreign coin.

The gold mining industry of the United States was prosperous in 1914 and regained its normal condition. The United States Geological Survey estimate of an output greater by nearly $4,000,000 than that of 1913 was verified by the returns made to the Director of the Mint. The production in 1913 was lower than for several years preceding, and that for 1914 was considerably below that of any year in the period 1908–12, when the high-water mark was reached. There were increases in Alaska, Arizona, California, Colorado, and other States. The output in Idaho decreased, as it did in Nevada. California retained first rank in 1914, followed in order by Colorado, Alaska, Nevada, and South Dakota.

The imports of gold in 1914 were valued at $58,122,000, and the exports at $242,711,000. This large excess of exports was due to the payment in gold of debts owed by Americans in Europe, a notable example being the case of New York City bonds. Credits through deposits of gold were established by the Bank of England at Ottawa, Canada, in South Africa, and in Australia, where such deposits could be credited to persons or firms in London without the danger of the shipment of the gold itself on the high seas.

WORLD'S PRODUCTION. The accompanying table shows the world's production of gold in 1912–14.

GOLD PRODUCTION OF THE WORLD

	1912	*1913*	*1914**
Transvaal ..	$188,599,260	$181,889,012	$173,275,610
Rhodesia ...	13,166,230	13,935,681	17,748,275
West Africa .	7,386,028	7,846,560	8,805,000
Madagascar, etc.	2,925,000	2,044,600	1,980,000
Total Africa .	$212,076,518	$205,715,653	$201,808,885
United States	$93,451,500	$88,884,400	$92,823,500
Mexico	22,500,000	20,500,000	17,500,000
Canada	12,559,288	16,216,181	16,550,000
Central America, etc. ..	3,632,500	3,030,400	3,500,000
Total North America	$132,143,288	$128,630,981	$130,373,500
Russia, inc. Siberia ..	$27,685,500	$29,500,000	$26,500.000
France	1,847,000	1,812,100	1,450,000
Other Europe	3,615,000	2,950,000	2,600,000
Total Europe	$33,097,500	$34,262,100	$30,550,000

	1912	*1913*	*1914**
British India	$12,115,162	$12,176,788	$12,258,000
British & Dutch E. Indies ...	4,925,000	4,789,100	4,690,000
Japan and Chosen ..	7,165,000	7,394,300	7,500,000
China and others ...	3,750,000	3,658,900	3,625,000
Total Asia, not inc. Siberia	$27,955,162	$27,969,088	$28,073,000
S. America .	$12,425,000	$13,058,400	$13,250,000
Australasia ..	56,685,800	53,033,391	51,250,000
Total for the world .	$474,333,268	$462,669,558	$455,305,885

* Preliminary estimates, *Engineering and Mining Journal* (New York).

The production in 1914 again showed a reduction, although the decrease as compared with 1913 was less than the difference between that year and 1912. The total, according to the preliminary figures of the *Engineering and Mining Journal* (New York) in 1914, was $454,305,885, which was $7,364,173 less than the corrected total for 1913. The decrease from 1912 to 1914 was $20,027,883.

With these estimates are included in the table herewith, compiled by the same authority, the figures for 1912 and 1913 corrected by official and other reports. Those for 1914 are based upon returns for 11 months, with estimates for the final month of the year from nearly all the principal countries. The figures for the United States are the preliminary estimates of the Director of the Mint and the U. S. Geological Survey.

The Transvaal, the largest producer of all, showed a decrease of $8,594,000, or about the same as the difference between 1912 and 1913, though the second half of 1914 showed a considerable gain over the corresponding period of 1913. Rhodesia and West Africa showed large increases.

While there was a decrease in the production of gold throughout the world, there was also an increased demand, and the effects of the war on the general disorganization of trade and exchange served to disturb conditions of production and movement. All of the nations of the world desired not only to retain their gold supplies, but to increase them wherever possible. As a result, with the apparent scarcity of gold, throughout the world there was a general rise in values.

The gold coin minted in the British mint in 1914 totaled £15,126,000, as against £27,638,000 in 1913. The number of silver pieces struck was 92,455,000 in 1914, against 60,159,000 in 1913, including 12,330,000 silver coins struck for the colonies in 1914. The total value of the silver coinage was £6,250,000 in 1914, against £1,934,000 in 1913. The reduction of gold coinage was due partly to the issue of emergency notes to take the place of gold, and to the fact that Egypt, Argentina, and other foreign countries, which usually take large quantities of sovereigns in the latter part of the year made few transactions of this kind in the closing months of 1914. The increase in the silver coinage was due to the war and Lloyd George's decision to add freely to the coinage at the beginning of the war. See METALLURGY; and PRICES, section *Causes*.

GOLD COAST, THE. A British crown colony and protectorate on the west coast of Africa, with a coast line of about 350 miles, and an inland extension of some 440. It borders on the Gulf of Guinea. The area of the colony is 24,200 square miles, of Ashanti 20,000, and of the Northern Territories 35,800. For administrative purposes the colony is divided into three provinces. The 1911 census returns give the population of the colony at 853,766, probably underestimated; Ashanti, 287,814; Northern Territories, 361,806. Population of Accra, the capital, 19,585; Cape Coast Castle, 11,364; Seccondee, 7725; Coomassie, 18,853. In the interior, agriculture is the chief industry. The soil is very fertile, and yams, cassava, corn, plantains, rice, cacao, spices, and rubber are cultivated. The coast tribes carry on fishing. From the forests are brought palm oil, palm kernels, rubber, lumber, cacao, and kola nuts. Since the fifteenth century gold has been exported, but it was not until 1874 that a company was formed for systematic exploitation. The development of transportation facilities favors the progress of this industry. The total exports of the country for the year 1912 were valued at £4,307,802, detailed as follows: £1,642,733 cacao, £1,470,660 gold and gold dust, £228,745 lumber, £205,365 palm kernels, £112,885 palm oil, £168,729 rubber, £134,231 kola nuts, £343,948 specie, etc. The imports, mainly cotton goods, provisions, and wines and spirits, were valued in 1912 at £4,023,322. Customs receipts, 1911, £663,462. Tonnage entered and cleared, 1912, 2,849,248, of which 1,625,804 British. Revenue, 1912, £1,230,850; expenditure, £1,157,091. The railway completed in February, 1898, runs from Seccondee to Tarquah, about 40 miles. An extension was completed to Coomassie Oct. 1, 1903. During the year the extension of the Gold Coast Railway from Komfrodna to Coomassie was under construction, and the first section, to Komfrodna, was reaching completion. The cost of the line from Komfrodna to Coomassie was estimated at $6,000,000. A branch line from Broomassie to Prestea has been completed; and a line is under construction from Accra to Akwapim, which has been completed to Mangoase, 39 miles. There is a wireless station at Accra. Sir H. C. Clifford (appointed 1912) was Governor in 1914.

GOLF. Francis J. Ouimet of Massachusetts who startled the golfing world in 1913 by defeating Harry Vardon and Edward Ray of England for the United States open title, retained his laurels in 1914 by winning the United States amateur championship. Ouimet also captured the French amateur title by defeating H. J. Topping of England 4 up and 3 to play. The victory of Walter C. Hagen, 20 years old, of Rochester, in the open championship came as a distinct surprise. Hagen returned the remarkable score of 142 for the 36 holes on the opening day of the tourney at Midlothian. His total for the 72 holes was 290, which defeated Charles W. Evans, Jr., by a margin of one stroke.

Mrs. H. Arnold Jackson won the women's national championship. As Miss Kate Harley, this same player had captured this title several years before. The winners in the minor tournaments in the United States were:

Metropolitan amateur, Oswald Kirkby; New Jersey, Oswald Kirkby; metropolitan open, Macdonald Smith; Massachusetts, Francis J. Ouimet; western amateur, Charles W. Evans, Jr.; western open, James W. Barnes.

The English open championship was won by Harry Vardon, who made the 72 holes in 306 strokes. J. H. Taylor, the title holder, was second with 309, and Archie Simpson third with 310. The English amateur championship went to J. L. C. Jenkins of Scotland, who defeated C. C. Hezlet of Ireland 3 up and 2 to play. The English women's championship was won by Miss Cecil Leitch, who defeated Miss Gladys Ravenscroft, title holder, 2 up and 1 to play. The French open championship was captured by J. B. Edgar of Newcastle-on-Tyne, England. Harry Vardon of England was second.

The American team championship of the Intercollegiate Golf Association was won by Princeton, which defeated Harvard in the finals by 5 matches to 4. The individual title went to E. P. Allis of Harvard, who defeated J. M. Washburn of Princeton 11 up and 10 to play. The University of Chicago won the western intercollegiate championship, while J. N. McDonald of Chicago captured the individual honors. In dual college matches Princeton defeated Dartmouth and Pennsylvania, tied Cornell, and lost to Yale. Cornell defeated Columbia and Pennsylvania, and tied Princeton. Yale defeated Princeton and Williams.

GOODKNIGHT, James Lincoln. An American clergyman and church official, died Oct. 2, 1914. He was born at Aeriel, Allen Co., Ky., in 1846, and graduated in 1871 from Cumberland University. He afterwards studied at the Union Theological Seminary, and took post-graduate courses at the Universities of Jena and Edinburgh. He was ordained to the Cumberland Presbyterian ministry in 1872, and from 1879 to 1889 filled pastorates in several towns in Kentucky, Ohio, and Pennsylvania. From 1895 to 1897 he was president of West Virginia University. He was for a time engaged in the banking business, but in 1900 became president of Lincoln University, filling this position until 1904. He was the proprietor of several newspapers from 1904 to 1911. In 1907 he was appointed stated clerk and treasurer of the general assembly of the Cumberland Presbyterian Church. He was one of the most prominent opponents of merging the Cumberland Presbyterian Church into the Presbyterian Church of the U. S. A. in 1906. He traveled extensively in Europe and Asia, and contributed on various subjects to many journals and periodicals. He was given the degree of LL.D. at Cumberland University in 1903.

GOODNOW, Frank Johnson. An American scholar and educator, elected on Oct. 1, 1914, president of Johns Hopkins University. He was born in Brooklyn, N. Y., in 1859, and graduated from Amherst College in 1879, studied law at Columbia University, receiving the degree of LL.B. in 1882, and afterwards studied at Paris and Berlin. From 1883 to 1887 he was instructor in history and lecturer on the administrative law of the United States at Columbia, and was adjunct professor in the same branches from 1887 to 1891, being professor of administrative law from 1891 to 1903, and Eaton professor of administrative law and municipal science from 1903 to the time of his election as president of Johns Hopkins. In 1906–07 he was acting dean of political science at the same university. During the year 1913–14 he acted as legal adviser to the Chinese government. Dr. Goodnow is one of the best known authorities on administrative law and city government. He has written: *Comparative Administrative Law* (1893); *Municipal Home Rule* (1895); *Municipal Problems* (1897); *Politics and Administration* (1900); *City Government in the United States* (1904); *Principles of the Administrative Law of the United States* (1905); and has also edited several works on law and taxation. He received degrees from Amherst College, and Columbia and Harvard Universities, and was also a member of many learned societies.

GOVERNORS' CONFERENCE. The seventh annual meeting of the Governors of the States, the so-called "House of Governors," met on June 9, 1914, at Madison, Wis. Papers were read on the following topics: "Report of the Committee on Coöperation," by Governor Emmet O'Neal, Alabama; "State Control of National Resources," by Governor William Spry, Utah; "Uniformity of Laws Fixing the Conditions to be Met by Foreign Corporations Before Doing Business in a State;" "Administrative Problems, Extradition, Submission of the Governor's Recommendation in Bill Form;" "Uniformity of Safety and Sanitation Laws for Places on Employment, Including Administrative Machinery."

GRAPHITE. The total production of graphite in the United States in 1913 was 4775 short tons, valued at $293,756, and 6817 short tons of manufactured graphite, valued at $973,397. The graphite industry is conducted under uncertain conditions, because the milling of disseminated flake graphite is still in the experimental stage, and the product is of uneven grade. Because of this unreliability of the domestic supply, most of the large consumers prefer to depend on imported material. In 1913 there were imported into the United States for consumption 28,879 short tons, valued at $2,109,791. The manufacture of graphite on a commercial scale from various forms of amorphous carbon is conducted by the International Acheson Graphite Company of Niagara Falls, which utilizes electric power generated at the Falls. Graphite has many uses. One of its most important is for lubricating, and it is used largely in the manufacture of pencils. It is also employed in the manufacture of graphite paint, especially for structural iron and steel work.

GREAT BRITAIN. The United Kingdom of Great Britain and Ireland. A constitutional monarchy. The capital is London. Great Britain consists of England, Scotland, and Wales, but the term "Great Britain" is often used to mean "United Kingdom." Attached to the United Kingdom, but not properly a part thereof, are the Channel Islands and the Isle of Man.

Area and Population. The area of the United Kingdom, including inland water, is stated at 121,331 square miles; that of the British Isles, that is, the United Kingdom plus the Channel Islands and the Isle of Man, 121,633 square miles. England and Wales, which are often regarded as a unit, comprise 58,340 square miles, or in land area alone 58,029 square miles; the population in 1901 was 32,527,843, and in 1911, 36,070,492. Scotland comprises 30,405 square miles, or in land area 29,796 square miles. By divisions the area, the population according to the censuses of April 1, 1901, and April 3, 1911, and the density per square mile in 1911, are shown in the following table:

	Sq. m.	*Pop. 1901*	*Pop. 1911*	*Dens.*
England*	50,874	30,813,043	34,045,290	669
Wales	7,466	1,714,800	2,025,202	271
Scotland	30,405	4,472,103	4,760,904	156
Ireland	32,586	4,458,775	4,390,219	135
U. Kingdom	121,331	41,458,721	45,221,615	373
Isle of Man ..	227	54,752	52,016	229
Channel Islands ...	75	95,618	96,899	1,292
British Isles.	121,633	41,609,091	45,370,530	374

* Including Monmouthshire.

No census is taken of the legal, or resident, population in the United Kingdom, and therefore the figures above do not include British soldiers, sailors, and merchant seamen abroad. As estimated for June 30, 1913, the population of the United Kingdom was 46,035,570; 1914, 46,407,037. Total population of each division of the United Kingdom at each census from 1821 to 1911:

	E. & W.	*Scotland*	*Ireland*	*U. K.*
1821	12,000,236	2,091,521	6,801,827	20,893,584
1831	13,896,797	2,364,386	7,767,401	24,028,584
1841	15,914,148	2,620,184	8,175,124	26,709,456
1851	17,927,609	2,888,742	6,552,385	27,368,736
1861	20,066,224	3,062,294	5,798,967	28,927,485
1871	22,712,266	3,360,018	5,412,377	31,484,661
1881	25,974,439	3,735,573	5,174,836	34,884,848
1891	29,002,525	4,025,647	4,704,750	37,732,922
1901	32,527,843	4,472,103	4,458,775	41,458,721
1911	36,070,492	4,760,904	4,390,219	45,221,615

Percentage of total population in the several divisions in 1891 and 1911, respectively: in England, 72.8 and 75.3; in Wales, 4.0 and 4.5; in Scotland, 10.7 and 10.5; in Ireland, 12.5 and 9.7.

In 1911, there were in England about 1073 females to 1000 males, in Wales 997, in Scotland 1062, and in Ireland 1003.

In England and Wales, the percentage of population in urban districts in 1911 was 78.1, as compared with 77.0 in 1901; in Scotland, the percentage of population in burghs in 1911 was 66.0, as compared with 58.5 in 1901.

The population of the larger cities of England and Wales was returned as follows in 1911: London (administrative county), 4,521,685 (Greater London, 7,251,358); Birmingham, 525,833 (with districts annexed Nov. 9, 1911, 840,202); Liverpool, 746,421; Manchester, 714,333; Sheffield, 454,632 (with area annexed April 1, 1912, 459,916); Leeds, 445,500; Bristol, 357,048; West Ham (within Greater London), 289,030; Bradford, 288,458; Kingston-upon-Hull, 277,991; Newcastle-upon-Tyne, 266,603; Nottingham, 259,904; Stoke-on-Trent, 234,534; Salford, 231,357; Portsmouth, 231,141; Leicester, 227,222; Cardiff, 182,259; Bolton, 180,851; Croydon (within Greater London), 169,551; Willesden (within Greater London), 154,214; Rhondda, 152,781; Sunderland, 151,159.

In Scotland, the 1911 census showed the population of the larger burghs as follows: Glasgow, 784,496; Edinburgh, 320,318; Dundee, 165,004 (in 1913, Broughty Ferry, which had 11,058 inhabitants in 1911, was annexed to Dundee); Aberdeen, 163,891; Govan, 89,605; Paisley, 84,455; Leith, 80,488; Greenock, 75,140.

In Ireland, the reported population of Dublin in 1911 is 304,802 (with suburbs, 403,030); Belfast, 386,947; Cork, 76,673; Londonderry, 40,780; Limerick, 38,518.

The following table shows the rate, per thousand of population, of births, of deaths, and of marriages (that is, persons married):

		E. & W.	*Scot.*	*Ire.*	*U. K.*
Births	1903	......28.5	29.4	23.1	28.0
"	1908	......26.7	28.1	23.3	26.6
"	1912	......23.8	25.9	23.0	24.0
"	1913	....	....	....	23.9
Deaths	1903	......15.5	16.8	17.5	15.8
"	1908	......14.8	16.6	17.5	15.3
"	1912	......13.3	15.3	16.5	13.8
"	1913	....	....	....	14.9
Marriages	1903	......15.7	14.3	10.4	15.0
"	1908	......15.1	13.5	....	14.5
"	1912	......15.5	13.7	10.6	14.8
"	1913	....	....	....	14.9

Number of passengers that arrived in or left the United Kingdom from or for countries out of Europe, distinguishing British and aliens (the last column shows the number of British passengers from and to the United States):

		British	*Aliens*	*Total*	*U. S.*
Arrivals	1909	..149,068	112,257	261,325	53,323
"	1911	..192,718	157,711	350,429	72,082
"	1912	..199,181	141,515	340,696	71,493
"	1913	..227,643	144,975	372,618	.....
Departures	1909	288,761	185,617	474,378	109,700
"	1911	454,527	168,898	623,425	121,814
"	1912	467,666	189,169	656,835	117,310
"	1913	469,640	......	......	129,169

Public Education. The educational system is partly under State and local control and partly private. Elementary education is compulsory between the ages of 5 and 14, and is provided free by the local authorities aided by State grants. Considerable progress has been made in the organization of a secondary-school system, but secondary education is still largely of a private character.

In England and Wales, on July 31, 1913, accommodations in the ordinary public elementary schools numbered 6,940,196, with average attendance of 88.73 per cent (6,862,876 and 88.79 per cent in 1912). At evening and similar schools, there were 798,881 pupils enrolled (784,984 in 1912). In the training colleges and hostels there were 1976 male and 3665 female students.

In Scotland, for the year ended Aug. 31, 1913, there were accommodations for 1,052,659 pupils, 816,055 enrolled, and 729,089 in average attendance (1,042,703 accommodations, 820,171 enrolled, 733,792 average attendance in 1912). Attendance at continuation classes was 143,942 in 1913 (144,815 in 1912). In the training colleges and centres there were in 1913, 508 male and 1876 female students.

In Ireland primary schools at the end of 1913 numbered 8299 (8255 at the end of 1912); school accommodations, 771,974 (769,697); pupils enrolled, 682,011 (668,974); average attendance, 502,622 (499,038). In the training colleges there were 467 male and 725 female students.

Pauperism. On Jan. 1, 1914, there were in England and Wales 271,463 persons in receipt of indoor poor relief (283,603 in 1913), and 389,314 in receipt of outdoor poor relief (411,525 in 1913). On Jan. 15, 1914, there were in Scotland 66,832 paupers and 38,413 dependents (67,757 and 40,535 in 1913). At the close of the first week in January, 1914, there were in Ireland 35,355 persons in receipt of indoor poor relief (37,017 in 1913), and 37,837 in receipt of outdoor poor relief (40,129 in 1913). These figures include casual paupers, and no deductions are made for persons counted twice, such as those who received indoor and outdoor relief on the same day.

AGRICULTURE. The total area of the United Kingdom, together with the Channel Islands and the Isle of Man, is stated at 77,724,044 acres, of which Great Britain 56,804,166, and Ireland 20,734,124. The total cultivated area in 1902 (first week of June) was 47,752,744 acres, of which 32,387,959 in Great Britain, and 15,240,135 in Ireland; in 1912, 46,793,747 acres, of which 31,996,024 in Great Britain, and 14,673,778 in Ireland. The cultivated area under principal crops in 1913, including that in the Channel Islands and the Isle of Man, and the produce in 1912 and 1913, are reported as follows:

	Acres	*Produce*	
	1913	*1912*	*1913*
Corn crops:		*Bushels*	*Bushels*
Wheat	1,791,569	57,402,302	56,696,400
Barley	1,982,321	58,207,198	65,682,581
Oats	3,933,448	164,800,638	165,282,235
Rye	63,556	....	....
Beans	275,626	7,784,045	7,602,475
Peas	165,121	8,924,494	8,885,877
Total	8,211,641	....	....
Other crops:		*Tons*	*Tons*
Potatoes	1,184,857	5,726,342	7,604,804
Turnips and swedes	1,770,079	24,061,857	25,819,517
Mangold	501,038	10,187,766	9,276,129
Cabbage, kohl-rabi, and rape	189,045	....	....
Vetches or tares .	114,710	....	....
Other green crops	225,010	....	....
Flax	59,958	....	....
Hops	35,676	*18,671	*11,282
Small fruit	100,094	....	....
Clover, sainfoin for hay	3,039,097	4,385,285	5,231,040
Rotation grasses, not for hay....	3,604,049	....	....
Bare fallow	396,472	....	....
Permanent grass:			
For hay	6,805,914	9,638,987	10,164,048
Not for hay ..	20,503,274	....	....

* Cwts.

Number of live stock in the first week of June (the figures for horses include only horses used for agriculture, unbroken horses, and brood mares):

	1910	*1911*	*1912*	*1913*
Horses	2,094,587	2,033,216	1,994,607	1,874,264
Cattle .	11,765,483	11,866,111	11,914,635	11,968,600
Sheep .	31,164,587	30,479,807	28,967,495	27,629,206
Swine .	3,561,481	4,250,012	3,992,549	3,305,771

MINING AND METALS. The following table shows the quantity of metal produced in 1912 and the estimated value, at place of production, for 1911 and 1912:

	Production	*Value*	
	1912	*1911*	*1912*
Pig iron*	4,451,636	£16,146,340	£16,419,298
Pig iron†	4,299,828	14,490,872	15,859,372
Tin	....	931,917	....
Lead	19,154	254,259	349,561
Zinc	6,062	153,598	158,622
Copper	291	28,461	22,714
Silver, oz.	122,998	12,128	14,882
Gold, oz.	1,546	1,415	5,103

* From British ores. † From foreign ores.

Excepting part of the pig iron, the metals named above were produced from British ores. The output of coal in 1913 exceeded in quantity and value that of previous years. In 1900 the output was 225,181,300 tons (spot value £121,652,596); in 1905, 236,128,936 tons (£82,038,553); in 1910, 264,433,028 tons (£108,377,567); in 1911, 271,891,899 tons (£110,783,682); in 1912, 260,416,155 (£117,921,068); in 1913, 287,430,473 (£145,535,669).

FISHERIES. The value of wet fish (exclusive of salmon and shellfish) landed on the coasts of the United Kingdom in 1911 was £11,427,739; in 1912, £12,779,717; in 1913, £14,229,000. In 1911, 102,000 men and boys were employed in the fisheries; the number of steam vessels employed was 3155, and of sailing vessels 21,827.

COMMERCE. Figures given below for the year 1913 are subject to revision. Total imports, imports reëxported, and net imports (that is, imports for home consumption) have been valued as follows (exclusive of specie and bullion, of foreign merchandise transshipped under bond, and of diamonds from the Union of South Africa):

	Total imports	*Reëxports*	*Net imports*
1903	£542,600,289	£69,573,564	£473,026,725
1908	592,953,487	79,623,697	513,329,790
1911	680,157,527	102,759,134	577,398,393
1912	744,640,631	111,737,691	632,902,940
1913	768,734,739	109,575,037	659,159,702

Imports of gold and silver specie and bullion in 1908 amounted to £56,472,203; in 1911, £62,987,500; in 1912, £69,467,185; in 1913, £74,028,598. Total exports, reëxports of foreign and colonial produce, and domestic exports (that is, exports of United Kingdom produce) have been valued as follows (exclusive of specie and bullion and of foreign merchandise transshipped under bond):

	Total exports	*Reëxports*	*Dom. exp.*
1903	£360,373,672	£69,573,564	£290,800,108
1908	456,727,521	79,623,697	377,103,824
1911	556,878,482	102,759,134	454,119,298
1912	598,961,130	111,737,691	487,223,439
1913	634,820,326	109,575,037	525,245,289

Exports of gold and silver specie and bullion: in 1903, £39,233,238; in 1908, £63,252,987; in 1911, £57,024,077; in 1912, £64,871,488; in 1913, £62,142,038.

The total imports of merchandise, the domestic exports of merchandise, and the foreign and colonial exports of merchandise in 1912 and 1913 are shown by classes in the following table, in thousands of pounds sterling (details for 1913 subject to revision):

	Total Imports		*Dom. exports*		*Foreign and Colonial Exports*	
I. Food, drink, and tobacco:	*1912*	*1913*	*1912*	*1913*	*1912*	*1913*
Grain and flour	88,496	85,495	4,289	3,561	1,938	1,655
Meat, including animals for food	49,080	56,726	1,103	1,148	1,426	2,130
Other food and drink	......	......	24,725	24,428	.....	.....
1. Non-dutiable	77,819	81,266	.....	.....	5,590	5,680
2. Dutiable	59,834	58,683	.....	.....	5,923	6,262
Tobacco	6,359	6,709	2,619	3,376	217	265
Total	280,588	290,202	32,686	32,608	.....	.....

	Total Imports		*Dom. exports*		*Foreign and Colonial Exports*	
II. Raw materials and articles mainly unmanufactured:	*1912*	*1913*	*1912*	*1913*	*1912*	*1913*
Coal, coke, and manufactured fuel	277	37	42,584	53,660	.....	3
Iron ore, scrap iron, and steel	9,060	7,433	409	412	11	9
Other metallic ores	9,060	10,197	115	130	642	563
Wood and timber	28,357	33,789	324	340	883	834
Raw cotton	80,289	70,571	.....	.....	10,587	9,143
Wool, including rags, etc.	36,568	37,736	4,818	4,623	14,511	13,574
Other textile materials	18,578	19,751	475	435	4,705	5,288
Oil seeds, nuts, oils, fats, and gums	37,419	41,577	4,569	4,468	5,756	5,682
Hides and undressed skins	13,690	15,067	2,028	1,886	8,255	8,411
Materials for paper-making	5,567	5,816	928	960	337	298
Miscellaneous	39,694	39,849	3,168	2,994	21,599	20,251
Total	275,668	281,822	59,417	64,638	.....	.....
III. Articles wholly or mainly manufactured:						
Iron and steel and manufactures thereof	12,962	15,231	48,598	54,292	278	321
Other metals and manufactures thereof	31,197	32,102	12,284	13,279	8,662	8,315
Cutlery, hardware, implements, and instruments	6,991	7,378	8,109	7,972	1,623	1,541
Electrical goods and apparatus*	1,458	1,587	4,342	5,386	226	240
Machinery	6,821	7,283	33,188	37,013	1,271	1,305
Ships and boats (new)	34	34	7,027	11,027	1	5
Manufactures of wood and timber, including furniture	2,874	3,583	2,059	2,042	316	589
Yarns and textile fabrics:						
1. Cotton	11,512	12,250	122,220	127,207	2,256	2,238
2. Wool	10,112	10,490	37,774	37,677	1,267	1,284
3. Silk	14,356	15,115	2,226	2,158	1,934	1,768
4. Other materials	8,890	9,129	14,576	14,828	2,268	2,377
Apparel, including boots, shoes, and hats	6,041	5,980	15,728	16,424	860	842
Chemicals, drugs, dyes, and colors	12,546	12,906	21,036	29,974	1,532	1,641
Leather and mfrs., excl. boots and shoes	14,343	13,431	5,248	5,648	2,276	2,437
Earthenware and glass	4,279	4,546	4,973	5,213	159	196
Paper and manufactures thereof	7,284	7,674	3,559	3,679	185	290
Railway carriages and trucks (not of iron), motor cars, cycles, carts, etc.	7,851	8,359	9,758	11,366	815	942
Miscellaneous	25,965	26,524	32,358	34,229	3,260	3,189
Total	185,466	193,602	385,028	411,572	.....	.....
IV. Miscellaneous and Unclassified†	2,918	3,107	10,092	11,385	.....	.....
Grand total	744,641	768,735	487,223	525,245	111,738	109,575

* Other than machinery and telegraph and telephone wire. † Including parcel-post goods not liable to duty.

Some of the important imports not specified in the table were valued as follows in 1912 and 1913, in thousands of pounds sterling: wheat, 46,445 and 43,849; butter, 24,354 and 24,084; bacon, 14,556 and 17,429; beef, 13,674 and 16,182; mutton, 9699 and 10,908; maize, 13,593 and 13,770; fruit, 12,030 and 12,398; refined sugar, 13,371 and 12,351; raw sugar, 11,779 and 10,716; tea, 13,126 and 13,783; cheese, 7415 and 7035; eggs, 8395 and 9591; barley, 7872 and 8077; oats, 6338 and 5672. The domestic export of cotton piece goods in 1912 was valued at £91,624,257, and in 1913 at £97,775,855; cotton yarn, £16,222,150 and £15,006,291.

Total imports consigned to and total exports consigned from the principal countries, in thousands of pounds sterling (details for 1913 subject to revision):

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United States	134,579	141,652	64,687	59,536
Germany	70,048	80,411	59,572	50,573
British India	52,149	48,730	59,755	71,738
France	45,505	46,353	37,582	40,877
Argentina	40,808	42,485	21,325	23,430
Russia	40,539	40,271	21,786	27,705
Canada	26,881	30,488	27,320	27,235
Australia	36,112	38,068	38,281	38,853
Belgium	23,616	23,382	19,556	20,668
Denmark	22,120	23,831	6,171	6,341
Netherlands	21,434	23,578	19,364	20,605
Egypt	25,790	21,395	9,597	9,967
New Zealand	20,302	20,338	11,186	11,776
Spain	14,552	14,394	7,678	8,655
Sweden	13,236	14,208	8,104	9,242
Switzerland	10,627	11,070	4,753	5,107
Italy	8,239	8,127	15,011	15,619
Austria-Hungary	7,019	7,706	6,153	5,786

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
Norway	6,897	7,437	6,030	6,669
Du. Colonies	6,921	4,335	979	1,553
Straits S'ments	14,972	15,800	5,156	6,001
Turkey	6,409	5,417	8,253	7,931
U. of S. Africa*	11,276	12,808	23,280	22,202
Chile	4,982	5,359	6,510	6,367
Japan†	3,933	4,388	12,471	14,748
Rumania	3,250	2,037	3,024	2,014
China	4,933	4,672	10,889	15,016
Peru	3,299	3,178	1,524	1,595
Brazil	9,360	10,008	18,172	13,016
Cuba	2,548	3,675	3,234	2,959
Total, including others	744,640	768,735	598,961	634,820

* Imports do not include diamonds.
† Including Formosa.

Shipping. In 1913 the total net tonnage entered at the ports, with cargo and in ballast (exclusive of the coasting trade) was 82,148,569, and cleared 82,661,012, as compared with 76,190,616 and 76,266,429 in 1912, 65,469,057 and marine of the United Kingdom (including the Channel Islands and the Isle of Man) comprised 12,602 steamers, of 18,683,039 gross tons, and 8336 sailing vessels, of 846,504 gross tons; the number at the end of 1912 was 12,382 steamers, of 18,197,117 gross tons, and 8510 sailing vessels, of 982,060 gross tons. Total at the end of 1913, 20,938 vessels, of 19,529,543 tons, as compared with 20,892 vessels, of 19,179,177 tons at the end of 1912. In 1912, 286,806 seamen were employed in British vessels (exclusive of vessels engaged in inland navigation, but inclusive of fishing vessels); of the total, 208,635 were British, 47,211 were Lascars and Asiatics, and 30,960 were other foreigners.

COMMUNICATIONS. The length of railway line open to traffic in the United Kingdom on Dec. 31, 1913, was 23,447 miles, as compared with 23,441 miles at the end of 1912, 23,205 at the end of 1908, and 22,435 at the end of 1903. Of the 1912 total, 13,139 miles were double-track line or more and 10,302 single-track line. Length of line in England and Wales open at the end of 1912, 16,223 miles (10,855 double-track or more, 5368 single-track); in Scotland, 3815 (1603 double-track or more, 2212 single-track); Ireland, 3403 (681 double-track or more, 2722 single-track). Total paid-up capital of railway companies in the United Kingdom Dec. 31, 1913, £1,343,884,518 (£1,334,963,518 Dec. 31, 1912); gross receipts, £139,253,000 (£128,553,417); working expenditure, £87,242,000 (£81,224,343); net receipts, £52,011,000 (£47,329,074); proportion of working expenditure to gross receipts, 63 per cent. The number of persons employed in working the railways in 1913 was 643,135.

The total mileage of tramways and light railways at the end of 1913 was 2675 (2642 at the end of 1912); paid-up capital, £77,198,680 (£76,062,966); gross receipts, £14,972,919 (£14,726,068); working expenses, £9,384,798 (£8,924,420); net receipts, £5,588,121 (£5,801,648).

With the outbreak of the war naturally considerable change in the operation of the railways was required. The various lines were taken over by the government and operated under a board of control formed of the general managers, which was headed by H. A. Walker, of the London and Southwestern, who was responsible to the government rather than to the directors or stockholders. This was done in pursuance of the Regulation of the Forces Act, 1871, which provided that full compensation should be paid for any loss or injury which the railroads might sustain. It was agreed that the railroad companies concerned should be compensated according to the amount of aggregate net receipts for their lines for the period during which the government had them in possession, by an amount corresponding to the difference between the aggregate net receipts for that period and the corresponding period of 1913, unless the net receipts of the first half of 1914 were less than the net receipts of the first half of 1913, when the government would reduce its payment in the same proportion. As soon as the government assumed control the Railway Executive Committee on organization issued a public notice in which it was stated that the railways would be operated as one complete unit in the best interests of the movement of troops, stores, and food supplies. The committee said that the discontinuance of the advertised traffic at short notice might be apprehended at any time, and that certain of the lines might be closed for ordinary traffic, and that no responsibility for delay or loss therefrom could be accepted.

The British military authorities for some years had under consideration arrangements for moving troops, horses, and materials, in case of mobilization, there being a railway council and a railway staff corps attached to the Royal Engineers, and various conversations had taken place at the Board of Trade with the railway officials to secure the best efficiency in any possible event. The actual result of the military use and of the government operation of the lines was to curtail the passenger train service and to affect the punctuality and general operation. Furthermore, the weekly traffic returns, usually published by the railways, were no longer announced. The decline in European and American imports and exports naturally led to a great curtailment of traffic while the operation of the various lines was attended by increased expense, due to high priced materials, etc. It was estimated that at least 40,000 employees had enlisted for service, and in the case of the North Eastern Railway the men were formed into a special battalion. This company alone contributed 5000 employees, or about one-tenth of its entire force. After the government took over the control of the railways a period of 60 hours was allowed in which to transport troops in 350 special trains to indicated points of concentration or embarkation. This work was actually accomplished in 48 hours, and the Great Eastern handled 75 special troop trains in one day, at the docks at Southampton, preserving a 12-minute interval schedule, in which period the preceding train unloaded troops, horses, etc., and got out of the way of the succeeding train.

On March 31, 1913, there were in the United Kingdom 75,042 miles of State telegraph and telephone lines, with 2,661,378 miles of wire (2,610,656 miles of wire in 1912). Postal telegraph offices in 1912, 11,561; railway, etc., telegraph offices, 2452; telephones, 701,125; post offices, 24,387. Letters delivered in the year ended March 31, 1913, in millions, 3477.8 (3298.3 in 1912); post cards, 926.5 (899.0); newspapers and half-penny packets, 1379.4 (1281.3).

FINANCE. The unit of value is the pound sterling, equivalent to $4.86656. For the year ended March 31, 1912, ordinary revenue (actual receipts into the exchequer) amounted to £185,090,286, and ordinary expenditure (actual issues out of the exchequer chargeable against revenue) £178,545,100; for the fiscal year 1913, £188,801,999 and £188,621,930. For the fiscal year 1914, the ordinary revenue and expenditure are reported at £198,243,000 and £195,640,000. The table below shows the receipts into the exchequer in the fiscal year 1914 and the estimated receipts for the fiscal year 1915:

Revenue	*1913-14*	*1914-15*
Customs	£35,450,000	£35,350,000
Excise	39,590,000	39,650,000
Estate, etc., duties	27,859,000	28,000,000
Stamps	9,966,000	9,900,000
Land tax	700,000	700,000
House duty	2,000,000	2,000,000
Income tax	43,929,000	45,250,000
Land value duties	3,320,000	3,300,000
Tax revenue	163,029,000	164,875,000
Postal services	21,190,000	21,750,000
Telegraph services	3,080,000	3,100,000
Telephone services	6,530,000	6,900,000
Crown lands	530,000	530,000
Suez Canal shares and sundry loans	1,580,000	1,870,000
Miscellaneous	2,304,000	2,180,000
Non-tax revenue	35,214,000	35,780,000
Total	198,243,000	200,655,000
Borrowings to meet expenditure chargeable against capital	*3,717,000	5,265,000

* Exclusive of the sum required to complete the purchase of the National Telephone Company's lines.

Issues out of the exchequer in the fiscal year 1914 and the estimated issues (as voted at the end of July, 1914) for the fiscal year 1915 are reported as follows:

Expenditure	*1913-14*	*1914-15*
National debt	£24,500,000	£24,500,000
Road improvement fund	1,340,000	1,545,000
Local taxation accounts	9,065,000	9,885,000
Other consolidated fund services	1,704,000	1,706,000
Consolidated fund services	37,209,000	37,636,000
Army	28,235,000	28,885,000
Navy	46,309,000	51,550,000
Public education	18,717,000	18,978,000
Old-age pensions	12,600,000	12,710,000
Labor exchanges, insurance, etc.	7,499,000	8,312,000
Other civil services	16,172,000	17,066,000
Civil services	54,988,000	57,066,000
Revenue departments	4,533,000	4,696,000
Postal services	24,366,000	26,152,000
Total supply services	158,431,000	168,349,000
Total	195,640,000	205,985,000
Estimated expenditure chargeable against capital	3,175,000	5,265,000

The expenses of the Great War necessitated a supplementary budget, introduced in November, 1914. As reported, a net deficiency of £339,571,000 was indicated, to be met as follows: new taxation, £15,500,000; suspension of sinking fund, £2,750,000; from existing loans, £91,000,000; from new loan, £230,321,000; total, £339,571,000.

The nominal amount of the funded debt on March 31, 1914, was £586,717,872; estimated capital liability in respect of terminable annuities, £29,522,219; unfunded debt, £35,000,000 (including treasury bills temporarily paid off, but renewable not later than June 30); total "dead-weight" debt, £651,270,091, as compared with £661,473,765 on March 31, 1913, and £674,744,567 in 1912. In addition to the dead-weight debt, there were on March 31, 1914, capital liabilities in respect of sums borrowed under various acts amounting to £56,384,019; the gross debt, therefore, in 1914, was £707,654,110, as compared with £716,288,241 in 1913 and £724,806,428 in 1912. The assets on March 31, 1914, were as follows: estimated market value of Suez Canal shares, £34,929,000; other estimated assets, £3,350,578; exchequer balances, £10,434,519; total, £48,714,097; the net debt, therefore, was £658,940,013.

Army. The army of Great Britain, unlike that of the continental powers, was recruited by voluntary enlistment, notwithstanding attempts made to secure compulsory service by conscription. On this basis at the outbreak of the war the various units were expanded to war strength and the wastage of battle made good, while new organizations were brought into being and large forces from the colonies were embodied in the Imperial army in addition to 1,000,000 volunteers being summoned to the colors to serve for the war by acts of Parliament of August 6 and September 10. Naturally during mobilization and throughout the remainder of the year no details were available as to the strength of the forces and the basis of organization. It was stated, however, that at the end of the year there were 3,000,000 men under arms. On a peace basis the strength of the army as reported in the budget for the fiscal year 1914–15 is given in the accompanying table.

	Establishments		*Effectives Jan. 1,*
	1914-15	*1913-14*	*1914*
Regular Forces (Regimental) Home and Colonial (including regular establishment of Special Reserves)	168,500	167,868	156,110
Colonial and Native Indian Corps	8,771	8,765	8,638
Army Reserve	147,000	145,000	146,756
Special Reserves (excluding Regular Establishment)	80,120	78,714	62,089
Militia, U. K. †	.....	.....	47
Militia, Reserve Division †	60	90	69
Militia, Channel Islands	3,166	3,166	*3,067
Militia, Malta and Bermuda, Volunteers	2,894	2,894	2,703
Territorial Force	315,485	315,438	251,706
Isle of Man Volunteers	126	126	119
Officers Training Corps (officers and permanent staff)	1,110	1,099	795
Total Home and Colonial Establishments	727,232	723,160	633,099
Regular Forces (Regimental) on Indian Establishment	75,896	75,897	78,476
Total	803,128	799,057	711,575

† Forces dying out.
* Oct. 1, 1913.

The organization of the British army, which had its first test in the war of 1914, is based upon two lines, the regular army with its reserve, and the special reserve and territorial forces consisting of the yeomanry and the former volunteers. This force is administered by an army council presided over by the Secretary of State for War, who in 1914 was Field Marshal, the Right Honorable Earl Kitchener of Khartum, and with whom was associated the Chief of the Imperial General Staff; the Adjutant General of the Forces, Lieut. Gen. Sir H. C. Sclater, in 1914; Quartermaster General of the Forces, Maj. Gen. Sir J. S. Cowans; Master General of the Ordnance, Maj. Gen. Sir S. B. von Donop; Parliamentary Under-Secretary of State, the Right Honorable H. J. Tennant, M.P.; the Financial Secretary of State, H. T. Baker, M.P.; and the Secretary, Sir R. H. Brade, K.C.B. The organization in the United Kingdom was based on eight different commands, six territorial and the London district and Aldershot, designated as follows: The Aldershot Command, the Eastern Command, the Irish, the London District, the Northern Command, the Southern Command, the Western Command, and the Scottish Command, while the scheme of organization involved in the war provided for a number of new armies, each including a number of divisions. On the outbreak of the war the Aldershot Command, which differed from the others in not being territorial but an expeditionary force in readiness for immediate service, was the first into the field, and it was estimated that Great Britain had in Europe by the end of August eight divisions and a cavalry division. These were under the command of Sir John French, Junior British Field Marshal, aided by Lieut. Sir Archibald Murray as Chief-of-Staff, assisted by Maj. Gen. H. H. Wilson, with Maj. Gen. Sir William Robertson as Quartermaster General, and Maj. Gen. Sir Neville McCrady as Adjutant General. The first corps sent into the field was commanded by Lieut. Gen. Sir Douglas Haig, and consisted of the 1st and 2d divisions previously under his command at Aldershot, while the second corps was commanded by Gen. Sir H. Smith-Dorrien, and consisted of the 3d and 5th divisions, made up partly from the Southern command and partly from the Irish command. At the same time there were also two detached forces namely, the 4th division under General Snow, and the 19th infantry brigade, while a cavalry division commanded by General Allenby, and an independent cavalry brigade under Brig. Gen. Sir Philip Chetwode were also sent into the field, with the Royal Flying Corps, which had been developed and increased under command of Brig. Gen. Sir David Henderson, who had been Director of Military Aëronautics. This British army was duly mobilized, and transported to various concentration points in England, and towards the end of August, having been landed in France, was ready for operations. The strength of this force and succeeding expeditions was estimated at about 165,000 men. At the same time various forces were withdrawn from the colonies, and troops were brought from India to the seat of war in Europe, landing in France. While the army was being dispatched to the seat of war and the various depot organizations for the different regiments were being brought up to strength so as to fill the losses caused on the battlefield, volunteering was being undertaken on a large scale, both for the regiments already organized and for new regiments. While any estimate of the strength of the British army must be considered more or less as a conjecture, yet the following figures published in a military journal may be considered as approximating the military strength of the British Empire at the outbreak of the war: UNITED KINGDOM: Regular army (peace establishment), 137,500; army reserve (strength), 139,000; special reserve (strength), 91,000; territorial force (strength), 260,000. INDIA: Regular army (war strength), 76,700; Indian army, native troops (regimental establishments) 159,000; reserve, 36,000. COLONIES AND EGYPT: Regular army (peace establishment), 45,000. SELF-GOVERNING DOMINIONS: *Canada:* Dominion troops, permanent force, 3000; militia, 42,000. *Australia:* Commonwealth troops, permanent force, 2400; citizen forces, 35,000. *New Zealand:* Dominion troops, permanent force, 500; territorial force, 34,000. *South Africa:* The Union defense force had not come into existence, but was proposed.

Changes in the armament of the regular army in the United Kingdom, apart from aircraft, included the issue of an improved cartridge and the adoption of a new howitzer gun. There had been no important change in the organization or armament of the regular army abroad, the Indian army or the Territorial force. The Canadian militia had been reorganized, and the Australian and South African forces established on the basis of a moderate amount of more or less general compulsory training for youths and adults between certain ages. It would have been some years before these forces normally could have reached their full strength, but volunteering for the war was active in the colonies. See WAR OF THE NATIONS, *passim.*

NAVY. Additions to the British navy after the outbreak of the war could not be stated with accuracy at the end of 1914. The following statement of the number of vessels and their displacement, issued by the Bureau of Naval Intelligence at Washington, relates to July 1, 1914. Number and displacement of warships of 1500 or more tons, and of torpedo craft of 50 or more tons, built and building (displacement of vessels building is estimated): Dreadnoughts (battleships having a main battery of all big guns, that is, 11 or more inches in calibre): built, 20, of 423,350 tons; building, 16, of 421,750 tons. Pre-dreadnoughts (battleships of about 10,000 or more tons, whose main batteries are of more than one calibre): built, 40, of 589,385 tons; building, none. Coast-defense vessels (smaller battleships and monitors): none built or building. Battle cruisers (armored cruisers having guns of largest calibre in main battery and capable of taking their place in line of battle with the battleships): built, 9, of 187,800 tons; building, 1, of 28,500 tons. Armored cruisers: built, 34, of 406,800 tons; building, none. Cruisers (unarmored warships of 1500 or more tons): built, 74, of 382,815 tons; building, 17, of 67,000 tons. Torpedo-boat destroyers: built, 167, of 125,850 tons; building, 21, of 21,770 tons. Torpedo boats: built, 49, of 11,488 tons; building, none. Submarines: built, 75, of 30,362 tons; building, 22, of 17,236 tons. Total tonnage: built, 2,157,850; building, 556,256. Excluded from the foregoing: ships over 20 years old from date of launch unless reconstructed and rearmed within five years; torpedo craft over 15 years old; ships not actually begun or ordered although authorized; transports, colliers, repair ships, torpedo-depot ships, and other auxiliaries.

The following comparative figures (relating to July 1, 1914) of tonnage built and building and the combined amount are of interest:

	Built	*Building*	*Total*
United Kingdom	2,157,850	556,256	2,714,106
Germany	951,713	854,864	1,806,577
France	688,840	211,075	899,915
United States	765,133	129,756	894,889
Japan	519,640	180,276	699,916
Russia	270,861	407,957	678,818
Italy	285,460	212,355	497,815
Austria-Hungary	221,526	125,982	347,508

The active personnel, July 1, 1914, is reported as follows; admirals of the fleet, 3; admirals, 12; vice-admirals, 22; rear admirals, 58; captains and commanders, 702; other line officers, 2508; midshipmen at sea, 639; engineer officers, 837; medical officers, 593; pay officers, 750; naval constructors, 122; chaplains, 147; warrant officers, 2740; enlisted men, 119,597; marine officers, 465; marines, 21,414 (including 3130 of the coast guard); total, 150,609. For Germany, on the same date, the total naval personnel is reported at 79,197; United States, 66,273; France, 63,846; Japan, 55,736; Russia, 52,463; Italy, 39,913; Austria-Hungary, 19,531. See NAVAL PROGRESS.

GOVERNMENT. The executive authority is vested in the King, acting through his ministers. Parliament is made up of the House of Lords and the House of Commons. The peers entitled to sit in the House of Lords in 1914 numbered 641, including the lords spiritual and temporal and three royal princes. The general election of December, 1910, returned 670 members of the Commons to the second Parliament of George V, which convened Jan. 31, 1911. In the Commons England has 465 members, Wales 30, Scotland 72, and Ireland 103. Party representation November, 1914: 261 Liberals, 37 Laborites, 76

Nationalists, 8 Independent Nationalists, 288 Unionists (opposition)—total, 670.

The King in 1914 was George V, born June 3, 1865, and succeeded May 6, 1910, as the second and only surviving son of Edward VII. He married, July 6, 1893, Princess Victoria Mary, only daughter of the late Duke of Teck. They have issue as follows: Edward Albert, born June 23, 1894, and created Prince of Wales June 23, 1910; Albert Frederick, born Dec. 14, 1895, a midshipman in the royal navy; Victoria Alexandra, born April 25, 1897; Henry William, born March 31, 1900; George Edward, born Dec. 20, 1902; John Charles, born July 12, 1905.

The ministry in 1914 was that of Mr. Asquith (Liberal), which was formed April 8, 1908. Those of the ministers who constitute the cabinet were as follows in November, 1914: Herbert Henry Asquith (appointed by the King in April, 1908), Prime Minister and First Lord of the Treasury; Viscount Haldane (1912), Lord High Chancellor; Earl Beauchamp (1914), Lord President of the Council; Marquis of Crewe (1908–11 and from 1912), Lord Privy Seal; Winston Spencer Churchill (1911), First Lord of the Admiralty. Secretaries of State: Reginald McKenna (1911), for home affairs; Sir Edward Grey (1905), for foreign affairs; Lewis Vernon Harcourt (1910), for the colonies; Earl Kitchener of Khartum (1914), for war; Marquis of Crewe (1910), for India. Chancellor of the Exchequer, David Lloyd George (1908); Secretary for Scotland, Thomas McKinnon Wood (1912); Chief Secretary to the Lord-Lieutenant of Ireland, Augustine Birrell (1907); Postmaster-General, Charles Edward Henry Hobhouse.

Presidents of committees of the council: Walter Runciman (1914), board of trade; Herbert Samuel, local government board; Joseph Albert Pease, board of education. Chancellor of the Duchy of Lancaster, Charles Frederick Gurney Masterman; First Commissioner of Works, Lord Emmott; Attorney-General, Sir John Allsebrook Simon. There are various other ministers besides the foregoing, but they are not members of the cabinet. The management of all maritime affairs, the government of the royal navy, etc., was in early times the province of the "Lord High Admiral"; but since 1708 these duties have been in the hands of commissioners or "Lords of the Admiralty," as follows—a political "First Lord" who is a cabinet minister, a "First Sea Lord," Second, Third, and Fourth Sea Lords selected from officers of the service, a political "Civil Lord" and an additional Civil Lord.

HISTORY

THE IRISH QUESTION. Before the opening of Parliament, which occurred on February 10, the attention of the public was held by a series of remarkable speeches on the all-engrossing topic of Irish Home Rule. The bitter controversy had seemingly entered upon its last stage. The Liberal Government gave no sign of weakening in its determination to carry the Irish Home Rule (Government of Ireland) Bill a third time through the House of Commons, so that in spite of the House of Lords the Home Rule Bill might be placed on the statute book in virtue of the provisions of the Parliament Act of 1911. So surely as the Home Rule Bill became law, the Opposition prophesied, the Ulster Volunteers would maintain by force of arms the right of the Protestants of Ulster not to be governed by an Irish Parliament. It seemed comparatively certain that the forthcoming session of Parliament would see the question settled one way or the other, either by the Cabinet's yielding, or by civil war in Ireland. Speaking at Bristol on January 15, Mr. Bonar Law, leader of the Opposition in the House of Commons, confirmed the rumor that there had recently been conversations between the various party leaders, with a view to compromise, but without result. The most striking passage of Mr. Law's speech, and one that called forth strong protest, was that in which he declared that "Parliament has a right to govern the people of Ulster; it has not the right to sell them into slavery." Lord Curzon gloomily discussed the prospects of civil war. Sir Edward Carson urged his Ulster Volunteers to continue their military preparations and proclaimed himself "above all things a man of peace, but not at any price." Mr. Redmond, the leader of the Nationalists, was willing to make any concession to Ulster which would be "consistent with (1) the creation of a Parliament for Ireland with an executive responsible to it, (2) the immediate settlement of this question, (3) the unity and integrity of Ireland." That no such concession would satisfy, may be inferred from Mr. Austen Chamberlain's declaration that there was "no concession which will avert the dangers that now threaten, that does not provide for the exclusion of Ulster from the sphere of a Dublin Parliament."

THE OPENING OF PARLIAMENT. The King's Speech, delivered at the opening of Parliament on February 10, referred briefly to the forthcoming royal visit to Paris, the hope for a stable government in Albania, the pending negotiations with Germany and Turkey regarding British commercial and industrial interests in Mesopotamia, the Safety at Sea Conference, and the drought in India. Turning to domestic affairs, the King urged a solution by agreement of the Irish question, and promised to submit proposals for the reconstitution of the second chamber of Parliament, for the more expeditious administration of justice in the King's Bench Division, for housing the industrial and agricultural population, for developing a national system of education, for improving the administration of justice with regard to young offenders, and "if time and opportunity permit, for other purposes of social reform." Among the many amendments offered to the Address in Reply, two are worthy of mention. The first was offered by Mr. Macdonald, who desired the government to reserve the South African Indemnity Bill (see SOUTH AFRICA, *History*), that is, to interfere in the feud between organized labor and the Botha government in the South African Union. The Laborites in England pretty generally resented the failure of the British ministry to check General Botha's attacks on the rights of labor in South Africa; Mr. Ramsay Macdonald's amendment, which was rejected, was designed simply to express this resentment. By holding a monster mass-meeting in Hyde Park the labor leaders in London found another way to show their sympathy for the agitators who had been arbitrarily deported from South Africa. In this connection it may be noted that Lord Gladstone was removed from the Governorship of South Africa, possibly because of the part he had played in the suppression of the strike; he was succeeded by Sydney Buxton, whose place as President of the Board of Trade in the British cabinet was taken by Mr. John Burns, formerly at the head of the Local Government Board. Mr. Herbert Samuel was appointed to presidency of the Local Government Board, and his place at the post office was given to Mr. Charles Hobhouse, who left the Chancellorship of the Duchy of Lancaster to Mr. Masterman. The second notable amendment to the Address was offered in identical terms in the House of Commons by Walter Long, and in the House of Lords by Lord Middleton: "that it would be disastrous to proceed further with the Government of Ireland Bill until it has been submitted to the judgment of the people." In the House of Commons the amendment was lost by a negative majority of 78 votes; in the House of Lords it was carried by 243 to 55. In the course of the debate in the Commons Mr. Asquith made an important speech supporting the thesis that at the time of the last General Election (1910), the intention of the Liberal party to utilize the Parliament Act for the establishment of Irish Home Rule had been so clearly stated, that there was now no need for another general election or referendum on the Irish question. A general election now, if favorable to the government would not convince Ulster, and if favorable to the Opposition would bring bitter disappointment to the vast majority of the Irish people. Mr. Asquith promised to bring in suggestions "which will consult not only the interests but the susceptibilities of all concerned," in the hope of not only averting civil war, but also securing favorable conditions for the inauguration of the new system of Irish government. Mr. Bonar Law replied to the premier's offer of compromise by pointing out that bloodshed could be avoided only by (1) excluding Ulster or (2) calling an immediate election. During the debate in the upper house, Lord Lansdowne declared his readiness to consider Home Rule with the exclusion of Ulster; but in common with Mr. Bonar Law, he was more inclined to demand an immediate election than to discuss the terms of a possible compromise. Lord Lansdowne put the case for a general election briefly and well: "We plead for a General Election on two very plain and easily intelligible grounds. The first is that we entertain a very sincere doubt as to whether this Bill has the support of a majority of the electorate of the United Kingdom. The second reason is that a General Election is surely the shortest, promptest, and the most efficacious method of escaping the horrors of civil war. If we were to win there would be no civil war because Ulster would have won the day. If there was a dead heat there would be no civil war, because both parties would be compelled to settle down together and thresh out some solution of the Irish Question. Supposing you (the government) win, the chances of civil strife would be enormously diminished, for Ulster would be conscious that England had pronounced against her. These are the reasons why we press for a General Election."

The Proposed Compromise. On March 9, on the occasion of the second reading of the Home Rule Bill, Mr. Asquith made good his promise to propose a basis for an amicable agreement. He proposed that a poll of the Parliamentary electors should be taken in the counties of Ulster, and that any county in which a majority of the voters so desired might be excluded from the operation of the Home Rule Act for a period of six years from the date of the first sitting of the Dublin Parliament. Each county so excluded would retain its present representation in the United Kingdom House of Commons. This would allow time for at least two general elections in the United Kingdom and five or six years' experience of the Dublin Parliament before Ulster could be asked to submit to Irish Home Rule, and then only with the full and mature consent of the British electorate. As the Roman Catholic Irish, Nationalist to a man, had a majority of the inhabitants in 6 of the 11 counties (the cities of Belfast and Londonderry being counted as counties for the vote, and Newry being included in county Down)—the percentage of Catholics in county Tyrone was 55 per cent, Cavan 81½ per cent, Monaghan 74¾ per cent, Donegal 78.9 per cent, Fermanagh 56 per cent, Derry 56 per cent—the opponents of Home Rule would count upon carrying only Antrim, Down, Armagh, Londonderry, and Belfast. The attitude of the Opposition towards Mr. Asquith's offer was not exactly enthusiastic. Sir Edward Carson, chief of the Ulster Unionists, declared that Ulster would not rest satisfied with a "sentence of death, with a stay of execution for six years." Bonar Law moved a vote of censure against the government, March 19, because Mr. Asquith had not elaborated his proposition in greater detail. The motion was lost by 93 votes, but it served to dispel any illusory hopes of conciliation. The standpoint of the Opposition was made clear by Bonar Law in his speech of March 19, when he "formally" and "solemnly" offered, "If he [Mr. Asquith] chooses to put his new suggestions into his Home Rule Bill, and if he submits these suggestions to the country by a Referendum and the country decides in favor of them, then I have the authority of Lord Lansdowne to say now that, so far as his influence in the House of Lords goes, that body will offer no impediment to carrying out completely, without alteration, and without delay, the decision of the will of the people of this country." Questioned more closely, Bonar Law agreed that in case such a referendum should vindicate the government, Ulster should be coerced; but Sir Edward Carson, when questioned on the attitude of Ulster, would give no answer. It appeared therefore, that if the government yielded to the demand for a referendum, there might still be danger of rebellion in Ulster. The country would vote, moreover, not so much on the merits of Home Rule for Ireland, as on the question of coercing Ulster.

The Army Veto. In the heat of the controversy the Unionists had let fall dark hints and ominous suggestions that in case the government should send the army to force Home Rule on Ulster, the army would refuse to obey. There were even vague references to the possibility of a revolution which would overturn the government. The army would veto the Home Rule Bill. In March, the army's obedience became the question of the hour. On March 14, Colonel Seely, Secretary of State for War, ordered Gen. Sir Arthur Paget to take special precautions for safeguarding government supplies of arms and stores in Armagh, Omagh, Carrickfergus, and Enniskillen. Apparently the precautions involved a considerable movement of troops to the Ulster counties; the Unionists feared that Ulster was to be intimidated by overwhelming forces. On March 20 General Paget wired the War Office that Brigadier General Gough and 57 officers of the Third Cavalry Brigade preferred to accept dismissal if ordered north. General Gough and the officers were called to a conference at the War Office, and on March 23 were given a statement over the initials of Colonel Seely, Sir John French, and Sir John Ewart, declaring that the Army Council was glad to learn that there had been no question of disobedience, but only a misunderstanding, and that the government had no intention of using the army "to crush political opposition to the policy or principles of the Home Rule Bill." Returning to Ireland, General Gough and the officers stationed at Curragh rejoiced over what they considered a complete acknowledgment of their right to refuse to coerce Ulster. This was the "Curragh incident." Its consequences were swift and important. The public was informed that the last two sentences of General Gough's "charter," which had the effect of accepting a conditional obedience from the army officers, had not been authorized by the cabinet, and were repudiated. On March 26 Sir John French and Sir John Ewart offered to resign from the Army Council. On March 27 a Special Order on Discipline was issued, declaring that in the future the army would be expected to give unconditional obedience to all lawful commands, without asking or receiving information in advance as to what services would be required. On March 30, in the House of Commons, Mr. Asquith announced that Sir John French and Sir John Ewart had resigned, not because they differed from the government on the question of military obedience, but because they had initialed a memorandum (General Gough's "charter"), which had been partially repudiated. Colonel Seely also resigned, and Mr. Asquith himself took over the portfolio of war. In accordance with Parliamentary usage, upon accepting the new office Mr. Asquith resigned his seat in the Commons, stood for reëlection in his constituency in East Fife, and was returned without opposition. In comment upon the Curragh incident, the *Morning Post* (March 26) had jubilantly announced, "The army has killed the Home Rule Bill." Bonar Law had declared (March 23) the view of the Opposition that any officer who refused "to coerce Ulster" would only be "doing his duty." The Liberals, on the other hand, vehemently retorted that never would they allow the army to interfere in a political controversy, to decide which laws should be enforced and which should not, to exercise a virtual veto on Parliamentary legislation; never would they permit a handful of officers, who happened to sympathize with Ulster, to overthrow the principles of Parliamentary government. Nor were the Laborites slow in pointing out that if it were admitted that army officers could refuse obedience when ordered to coerce their friends in Ulster, then common soldiers would be justified in refusing to coerce their working-class friends in case of a strike. Mr. J. H. Thomas, secretary of the railwaymen's organization, declared that, according to Unionist doctrine, he should say to the 400,000 railwaymen, who were preparing to strike next winter for higher wages and an eight hour day, "organize your forces. We will use our £500,000 of capital in our union to provide arms and ammunition for you." If the army could not be used against rebellious Ulster, it could not be used against insurgent Labor.

Undeterred by the Curragh incident, the government pressed on with the Home Rule Bill, which had been presented for a third time under the Parliament Act, and had received formal first reading in the Commons, March 5. On April 6 the bill passed second reading in the Commons by 356 to 276. The Opposition attempted to stave off the third reading by offering a motion for adjournment, which was defeated by 286 to 176, whereupon the House was thrown into disorder by the continued demand of "adjourn" arising in a rhythmical chant from the ranks of the Opposition. The Speaker asked Bonar Law if this demonstration was planned with his approval, but received only an angry retort. The disorderly sitting was suspended summarily, May 21. When the House sat again on May 25, the Speaker admitted "using an expression which he ought not to have used." The third reading was then passed by 351 to 274 votes, with a government majority of 77, and the bill was sent up to be rejected by the Lords.

The Home Rule Amending Bill. All the provisions of the Parliament Act having been complied with for the enactment of the Home Rule Bill without the consent of the Lords, i.e. the House of Commons having in three successive sessions signified their approval of the bill, it was time for Mr. Asquith to submit his project of compromise. Lord Crewe was entrusted with the task of bringing into the House of Lords, June 23, a bill to amend the Home Rule Bill in the sense of Mr. Asquith's plan of March 9. If within three months after the passing of the Amending Act, not less than one-tenth of the Parliamentary electors in any county in Ulster (Belfast and Londonderry to be treated as counties; Newry to be included in Down) should so petition, a poll would be taken on the question of temporary exclusion. If a majority of the votes cast favored exclusion, the Home Rule Bill would not apply to that county until the expiration of the six years commencing on the day of the first meeting of the Irish Parliament. The excluded area would send members to the Westminster House of Commons instead of to the new Irish Parliament. The House of Lords, however, so radically amended the Amending Bill before according it a third reading on July 14, that no expectation could be entertained of its acceptance by the Commons.

The Conference at Buckingham Palace. In the interval before the Amending Bill should be presented to the House of Commons, the King called a conference of party leaders to discuss the situation. At that time, the Ulster Unionists had organized a force of over 100,000 men, of whom at least 25,000 were well drilled, armed, and uniformed. The Nationalists had not yet pushed their preparations to such length, but were rapidly recruiting a volunteer army which bade fair soon to surpass its rival in numbers. In Belfast on July 10, Sir Edward Carson and his associates held the first meeting of the "Ulster provisional government," whose object was "to hold Ulster against a home rule parliament in trust for the King and the British Constitution." In celebrating the 225th anniversary of the historic battle of the Boyne, the Ulster Orangemen manifested a quiet determination that was more ominous than turbulent. The long-threatened civil war seemed very near. At this crisis, the King summoned to Buckingham Palace the Speaker of the Commons, Mr. Asquith and Mr. Lloyd George to represent the Government, Lord Lansdowne and Mr. Bonar Law to represent the Opposition, Mr. John Redmond and Mr. Dillon to represent the Irish Nationalists, and Sir Edward Carson and Captain Craig to speak for the Ulster Unionists. The King, in few but vigorous words, urged the leaders to agree upon a compromise which would avert bloodshed. But after four meetings—July 21, 22, 23, 24—the Conference was unable to agree either in principle or in detail upon the possibility of defining an area which should be excluded from the operation of the Home Rule Bill. The press, by the way, raised the interesting constitutional point, whether the King in calling the party leaders together had not taken too active a part in politics; but as Mr. Asquith subsequently announced, the King had acted in perfect constitutionality with the advice and consent of his ministers, and his speech had been approved by Mr. Asquith the day before delivery.

GUN-RUNNING IN IRELAND. A gun-running episode on July 26 made the outlook still gloomier. Nationalist Volunteers attempted to run in a consignment of arms which had been landed from a yacht at Howth, eight miles from Dublin. At Clontarf they were met by the Dublin police and a body of the King's Own Scottish Borderers, and several men were killed. The soldiers, that is, the Borderers, in returning to their barracks, were assailed by an angry mob, and fired without orders, killing 3 and wounding 32 persons. Mr. Redmond in Parliament immediately expressed intense indignation that the authorities had allowed Unionists freely to violate the proclamation against gun-running, whereas the Nationalists had been shot down by soldiers for the same offense. On April 24, for example, the Ulster Volunteers had successfully smuggled into Ireland a huge consignment of Mauser rifles (25,000 or more) and a million rounds of ammunition, in open and flagrant violation of the Proclamation of 1913 which prohibited the importation of firearms into Ireland. By way of anticipation, it may be stated here that a Commission of Inquiry on October 1 reported that the calling out of the soldiers against the Nationalists was quite unjustifiable, and recommended the sufferers to "the sympathetic consideration of the Lords of the Treasury." But at the time only bitter and unmitigated resentment was felt, and Ireland seemed nearer than ever to civil war. Compromise had failed, conference had failed. The government was unflinchingly determined to put the Home Rule Bill on the statute book, and on the other hand the Ulster Unionists were steadfastly resolved that sooner than yield, they would fight to the bitter end. Just at this trying time, when the United Kingdom was in peril of fratricidal strife, Austria-Hungary made war on Servia. Great Britain was speedily drawn into the conflict. And in the face of foreign war, a truce was called in the battle for Irish Home Rule.

THE BUDGET. Before proceeding with the history of events subsequent to the declaration of war, notice must be given to sundry other events which occurred prior to the war. Not the least in importance was the presentation of a remarkable Budget by the chancellor of the exchequer. For the first time since his famous Budget of 1909, David Lloyd George had to introduce new taxation, in order to meet increased naval and social expenditure, and in order to give relief to local ratepayers. Whereas the revenue of 1913–14 had amounted to £198,243,000, the estimated revenue for 1914–15 was to attain the figure of £209,275,000. Of this sum, £8,620,000 was expected to come from new taxation. In detail, (1) the Death Duties were to be increased from 7 per cent to 8 per cent on estates between £60,000 and £70,000; and so on up to estates exceeding £1,000,000, on which the rate of the duty was raised from the old 15 per cent to 20 per cent. (2) The general rate of the tax on unearned incomes, and on all incomes exceeding £2500 was to be increased from 1*s.* 2*d.* on the £ to 1*s.* 4*d.* (3) The super-tax on incomes over £3000 was increased in scale so as to yield £2,500,000 more. (4) A tax upon foreign investments was to bring in £250,000. Of this new revenue, £2,717,000 was absorbed by the increase in the naval estimates. About the same amount—£2,768,000—was to be expended in local grants in aid of the local rates for public health, housing, and other important services. The government intended to carry out, moreover, a reform of local taxation by establishing a national system of land valuation as a basis for the assessment of rates. Lloyd George expected that in the following year, 1915–16, he would be able to assign much larger funds for educational and local grants, as the new taxes would then produce a more considerable increase in the revenue. In June, the cabinet decided to postpone the payment of local grants until the spring of 1915, and for the time being to drop the 16th penny of the income tax. This left the estimated revenue at £207,146,000 and the expenditure at £207,021,000. The Finance Bill was finally passed in the Commons on July 23, and in the Lords July 30.

THE PARLIAMENT ACT BILLS AND OTHER MEASURES. The most significant, although not the most spectacular feature of the session was the introduction on March 5 of the three bills which the government was determined to carry over the Lords' veto, in virtue of the provisions of the Parliament Act of 1911, whereby a bill if passed in three successive sessions by the House of Commons may be presented for the royal assent without the approval of the House of Lords. In pursuance of this plan, the Plural Voting Bill had already been passed once by the Commons, and the Government of Ireland Bill and the Established Church (Welsh Disestablishment) Bill had been passed in two successive sessions by the House of Commons and rejected by the Lords. The Government of Ireland Bill has already been treated. The Welsh Disestablishment Bill came up for debate in April, and on second reading, April 21, received a majority of 84 votes. Mr. McKenna stated that after disestablishment the Anglican Church in Wales would retain an income of £19,000 from private benefactions, £84,-

000 from Ecclesiastical Commissioners and Queen Anne's Bounty, £80,000 from the commutation of life interests, and £32,000 from augmented grants from the Ecclesiastical Commissioners and Queen Anne's Bounty—in all £215,000 a year. All church buildings, palaces, residences, deaneries, rectories, and vicarages, together with all movable property, would remain in the hands of the Church. The motion to reject the bill was defeated by 77 votes on May 19, and the bill was read the third time in the House of Commons. It will presently be noticed that these two bills, the Irish Home Rule and the Welsh Disestablishment Bills, were rejected by the Lords but nevertheless received the royal assent and were placed on the statute book, September 18. The Plural Voting Bill received a majority of 77 on second reading April 27; at that time Sir Robert Finlay, a Unionist, stated that "Previous Reform Bills had been enfranchising Bills, but this was a disfranchising measure, which would take away 500,000 votes. It was introduced because, by four to one, the plural voters were against the Government." The bill was passed on third reading in the Commons, June 15, by a majority of 78, and was thrown out on second reading by the Lords on July 15. Other bills passed by the session which ended on September 18 concerned British Nationality and Naturalization; East African Protectorates Loan, Housing, Administration of Justice, Anglo-Persian Oil Contract, Bankruptcy, Coal Mines, Finance, Sudan Loan, Irish Education, National Insurance Amendment. Twenty other government bills of minor importance were passed into law, besides 11 private members' bills, and a number of war measures. Early in the session, the House of Lords instituted an inquiry into the charges of corruption brought against the former Chief Liberal Whip Lord Murray of Elibank, who frankly acknowledged that he had used the funds of the Liberal party to purchase shares in the American Marconi Company, without consulting other members of his party, and without informing his successor, Mr. Illingworth; but since Lord Murray had taken over the shares himself, at the price paid at the date of purchase, at a very large personal loss, the Select Committee found him guilty of no more serious fault than a grave error in judgment. Although brief space is here allotted to it, the progress of Lloyd George's land campaign must not be allowed entirely to escape observation. The Urban Report of the Land Enquiry Committee—the Rural Report had been published in 1913—and the Report of the Scottish Land Enquiry Committee may be regarded as historical documents of the highest importance, for they furnished both an orientation for the government's future land reforms, and an exhaustive examination of existing conditions.

Sir Edward Grey and the Near East. In the international negotiations regarding the ever-troublesome Near Eastern Question, Sir Edward Grey played a most important rôle, acting practically as spokesman for the Triple Entente. On Dec. 13, 1913, it will be recalled, he had proposed: (1) the postponement of the evacuation of Southern Albania by Greece; (2) the retention by Greece of the Ægean Islands, except Imbros and Tenedos; (3) the restoration to Turkey of the 12 islands (Dodecanesia) held by Italy. Replying to Sir Edward Grey, the Powers of the Triple Alliance agreed to recognize Greek possession of Chios, Mytilene, Lemnos, and Samothrace, on condition that Greece should at once evacuate Albania. As for the Dodecanesia, Italy alleged that Turkey had not yet withdrawn all Turkish officers and soldiers from the Tripolitaine, as stipulated in the Treaty of Lausanne, and that consequently the time was not ripe for the restoration of the 12 islands. Moreover, Italy demanded certain concessions in the vicinity of Adalia (Asia Minor), as compensation for the considerable expense entailed by the occupation of Rhodes. This demand necessitated negotiations between Italy and Great Britain, since British interests predominated in the Adalia region. Later it was reported that the two Powers had come to an understanding about their interests in Asia Minor. Resuming the discussion of the first two points of his December note, Sir Edward induced the Powers to present a collective Note to Greece on February 13, and a similar Note to Turkey on February 14, proposing that, on condition of the withdrawal of Greek troops from Albania before March 31, Greece should be allowed to retain all the Ægean Islands held by her, except Tenedos, Imbros, and Castelorizo, which must be restored to Turkey. Greece would undertake to prevent smuggling, to protect the Moslem minorities in the islands, and to erect no fortification or naval base upon the islands. The Greek Reply was received in February, and in the main Sir Edward Grey's propositions were accepted.

British Armaments. In view of the great war, particular interest attaches to the question of British armaments. Great Britain did not pretend to have a strong army. A paltry 121,000 made up the army at home; a like number composed the army abroad; and there were 146,000 in the Army Reserve. No attempt was being made to increase the size of the army; indeed, no little difficulty was experienced in maintaining the present strength under a system of voluntary enlistment. The Army Estimates for 1914–15, presented in April, totaled £28,845,000, the increase of £625,000 over the previous year being accounted for by the introduction of a higher schedule of payment for officers and by increased attention to aviation. With the navy, the case was different. The British Naval Estimates for 1914–15 amounted to £51,550,000, and showed an increase of £2,740,000 over the amount spent in 1913–14, including the supplementary estimates (March, 1914) of £2,500,000. The personnel of the navy was to be augmented by 5000 officers and men; by the end of the year the total number of officers and men would be 151,000, an increase of 17,285 since 1911. During the same period, from 1911 to the end of the current year, the increase in the personnel of the German navy amounted to 18,581. Great Britain's 62 seaplanes and 41 other 'planes could not be matched by any other Power. The new programme of naval construction included 4 battleships, 4 light cruisers, 12 destroyers, and other craft to be constructed at a total cost of £14,817,000, as compared with £18,824,700 in the programme of the previous year. Owing to the deplorable deadlock on the defense question in Canada, Mr. Churchill proposed to accelerate the construction of two ships in the British programme of 1914 so as to have them ready in

1916. As for the colonies in Australasia, they would be amply protected by the Imperial Navy and by Japan. In order that all available ships might be placed under the control of the Admiralty, Mr. Churchill proposed the creation of an Imperial Squadron, to which the colonies would contribute their dreadnoughts; and the demands of local patriotism and commerce-protection might be met by the maintenance of colonial flotillas of light cruisers and destroyers, which could coöperate with the Imperial Squadron if necessary. While the strength of the British navy was being tremendously increased, it was plain that in Great Britain the cost of maintaining the navy was regarded with increasing dissatisfaction. The annual business meeting of the National Liberal Federation at Northampton on April 3, for example, passed a resolution expressing alarm at the ever-increasing naval expenditure, "which cannot fail, sooner or later, to lead to an increase of taxation," and urging the government to press forward friendly negotiations with foreign Powers "in order that an end may be put to suspicion and misunderstanding, the most fruitful causes of the disastrous rivalry in armaments between the nations of Europe." Mr. Churchill, on March 17, made an offer to Germany, for the slackening of naval competition. "We are seeking to complete eight battle squadrons (in the Home Fleet), by the time the next naval power has completed five," he declared. "Every delay, accidental or deliberate, on the part of the next strongest naval power in the development of its enormous fleet organization will be matched by us." Formerly Great Britain had aimed at a 10 per cent superiority over the two next strongest naval powers; but since Great Britain had no need of defense against the United States or France, a new standard had been adopted in 1908–09 of a 60 per cent superiority over Germany. In April, 1914, Mr. Churchill affirmed that Great Britain had more than the required 60 per cent superiority in dreadnoughts, as the British First Fleet included 19 dreadnoughts as opposed to 11 dreadnoughts in the German High Sea Fleet, from which 2 dreadnoughts were temporarily absent. In July Sir Edward Grey informed the House of Commons that all efforts on the part of the British government to bring about an agreement for the reduction of armaments had been received in a hostile spirit and interpreted as attempts to lessen the freedom of action of the Powers in naval competition with Great Britain.

Great Britain and the War. For Great Britain, the War of the Nations came at a most inauspicious moment. Ireland was on the verge of civil war. The army was not in prime condition. The self-governing colonies were more or less at variance with the mother country on the question of naval policy. And the hesitation of the British government about entering the European conflict had encouraged the rise of a pacifist party, reluctant to make war unless Great Britain should be directly attacked. The resignation of three prominent pacifists from the cabinet gave rise to the rumor that the cabinet itself had been sadly divided on the question of going to war. At any rate there was a reorganization of the ministry, Earl Beauchamp succeeding Viscount Morley as Lord President of the Council, Mr. Walter Runciman succeeding John Burns as President of the Board of Trade, Lord Lucas succeeding Mr. Runciman as President of the Board of Agriculture, and Lord Emmott succeeding Earl Beauchamp as First Commissioner of Works. The appointment of Lord Kitchener as Secretary of War secured the active coöperation of an eminently able administrator: it also signalized the triumph of the partisans of war. From German sources emanated reports calculated to produce the impression that a serious pacifist and Laborite opposition was being encountered by the British government; on the contrary we have the statement issued in October over the signatures of officials of mining federations, railway clerks, trades organizations, the Fabian Society, the Parliamentary Committee of the Trades Union Congress, and the General Federation of Trade Unions. This statement, which may be taken as the voice of the Labor movement, reviewing the causes of the war, pledged the loyal support of the working classes for the war against German militarism, since the victory of the German army "would mean the death of democracy in Europe."

The War and the Irish Question. The Irish question continued to embarrass Great Britain, although a truce was declared in the factional strife at the outbreak of the war. The threatened Ulster insurrection, it is true, was averted; and John Redmond, the Irish Nationalist, vied with Sir Edward Carson, the Ulster Unionist, in promising that in the hour of peril Ireland would not desert England. "The coast of Ireland," declared John Redmond, "will be defended from foreign invasion by her armed sons, and for this purpose armed Nationalist Catholics in the South will be only too glad to join arms with the armed Protestant Ulstermen in the North." But the vexed Irish Question again arose to disturb the patriotic unanimity of parties. Lord Lansdowne, the Unionist leader in the House of Lords, on September 14 proposed that the Irish Home Rule Bill and the Welsh Disestablishment Bill—both of which having been passed three times by the Commons needed only the formal assent of the King to become law—should be held up until the conclusion of the war, when, by a special dispensation, a single session would suffice to carry them over the Lords' veto. The proposition was not even considered in the Commons, however, where on September 15, Mr. Asquith introduced a Suspensory Bill (passed September 18), whereby the Home Rule Act and the Welsh Church Act were suspended from operation until the expiration of 12 months from the date of passing of those acts, or "until such later date (not being later than the end of the present war), as may be fixed by His Majesty by Order in Council." Mr. Asquith, on September 15, in the Commons, gave his solemn pledge that (1) "the Home Rule Bill will not and cannot come into operation until Parliament has had the fullest opportunity by an Amending Bill of altering, modifying, or qualifying its provisions in such a way as to secure at any rate the general consent both of Ireland and of the United Kingdom." (2) "The employment of force of any kind for what you call the coercion of Ulster is an absolutely unthinkable thing." With these provisos, the Irish Home Rule Bill and the Welsh Disestablishment Bill received the formal assent of the King at the prorogation of Parliament on September 18, in spite of the dissent of the Lords. The effect upon the internal harmony of Great Britain may well be judged from Sir Edward Carson's denunciation of Mr. Asquith's "unparalleled treachery," and Mr. Bonar Law's fulminations against what he considered a breach of faith on the part of the government in failing to observe a strict party truce. Nor was Ireland captivated by the measure; to be sure a Home Rule Act had been placed upon the statute book after decades of fruitless attempts, but the fact that the act was to be suspended in operation, and might be radically amended, tended to diminish enthusiasm. While the Ulster Unionists found in the war a splendid chance to prove their boasted loyalty to the British Crown, the Irish Nationalists were less eager to enlist in the army. Perhaps the paucity of Irish recruits was partly caused by the reluctance of the British government to provide an adequate number of Catholic chaplains for the army. The fact that several Irish journals had to be suppressed, however, could be explained upon no other hypothesis than that Ireland could not forget in a day the wrongs of centuries.

WAR MEASURES. The situation created by the war demanded prompt and far-reaching action on the part of the government. In the first place, Mr. Asquith on August 6 asked Parliament to authorize a war credit of £100,000,000 and an increase of 500,000 men for the army. Two days later an Act was passed for the Defense of the Realm, whereby espionage was made a military offense, punishable by life imprisonment, and even in some cases by death. About 9000 German and Austrian men of military age were apprehended and held as prisoners of war in detention camps, in addition to 70,000 registered enemy aliens who were held under police surveillance. The press was placed under a strict, and to some minds, an unreasonable, censorship. The government assumed control over the railways, and a committee of general managers under the honorary chairmanship of the President of the Board of Trade handled the railways with creditable coolness during the crisis caused by the transportation of troops, arms, and supplies. A committee to relieve distress was formed under the presidency of Herbert Samuel, the President of the Local Government Board; and local committees were set up to guarantee efficient and business-like measures for the alleviation of misery. John Burns, it is interesting to note, became chairman of the committee for London. In dealing with the financial situation Lloyd George exhibited such resourceful and statesmanlike ability as to win praise from his hitherto most bitter opponents. A moratorium was declared for all liabilities accruing between August 4 and September 4 (the moratorium was later extended to November 4); but the payment of wages, salaries, rates, taxes, freights, interest, dividends, and liabilities of less than £5 was not thereby affected. New £1 and 10*s.* bank notes were issued, and postal orders made legal tender. One of the most remarkable emergency measures was the arrangement effected whereby the State guaranteed the Bank of England against any loss which it might incur in discounting bills of exchange accepted prior to August 4. The bank discount rate, which at first had risen from 3 per cent to 10 per cent, now dropped to 5 per cent. In order to encourage shipping, the government assumed 80 per cent of the war risks on vessels venturing out during the war. By guaranteeing war risks on wheat and flour shipped from across the ocean, and by fixing maximum prices for the retail sale of foodstuffs, the government averted the danger of famine. In consequence of these prompt remedial measures, and of Great Britain's supremacy on the high seas, British trade suffered less than might have been expected: in August there was a falling off of £37,000,000; but in September the imports picked up by £2,700,000, and the exports by £2,452,000. According to Mr. Runciman's statement, there was a serious depression in the cotton industry, not wholly due to the war, but the woolen mills were working overtime, and the iron and steel industries, in Birmingham and Sheffield at least, were busily filling armament orders. On October 29 the German-born Prince Louis of Battenberg resigned his position as First Sea Lord, and was succeeded by Baron Fisher of Kilverstone. The execution of a German spy, Karl Hans Lody, on November 10, was the first execution in the Tower of London since 1749. On November 24 the British government took the extraordinary step of sending Sir H. Howard as envoy to the Vatican.

THE NOVEMBER SESSION. On November 11 Parliament was convened for a session that lasted only until November 27. During that short time, some twenty bills were approved, including a new war credit of £225,000,000, a finance bill imposing new taxation, an augmentation of a million men for the army, and amendments to the Trading with the Enemy Act and the Defense of the Realm Act. The party truce was strictly observed, and no divisions were taken. The War Budget, in the preparation of which Lloyd George had invited Austen Chamberlain to coöperate, was calculated to make good a falling-off of £11,350,000 in the estimated revenues for the year 1914–15, and to meet an increase of expenditures (including the war credits of £100,000,000 voted on August 8, and £225,000,000 voted November 17) which swelled the total expenditure to the enormous sum of £535,367,000. £45,000,000 had already been advanced in loans to Belgium (£10,000,000), to Servia (£800,000), and to Canada, Australia, New Zealand, and South Africa. In order to supply the vast sums so freely disbursed, Lloyd George increased the tax on tea from 5*d.* to 8*d.*, the tax on beer from 7*s.* 9*d.* to 25*s.* per barrel, the tax on incomes by a third, and the super-tax by a third (this effect was obtained by doubling the rate for the remainder of the year). But the increased taxation would bring in only £15,000,000. Twenty times that amount had to be raised by a war loan of £350,000,000. As the loan was issued at 95, its actual yield was only £332,500,000; and the 3½ per cent interest on each share of the loan represented almost 3.7 per cent on the actual investment. By oversubscribing the loan, the British market gave proof of its strength, and lent confirmation to Lloyd George's prophecy that by "silver bullets" Great Britain would purchase the victory.

For additional information, see the articles on the WAR OF THE NATIONS; on the various colonies; on GERMANY, *Foreign Relations;* on SOCIALISM; on WOMAN SUFFRAGE; on the UNITED STATES; on SAFETY AT SEA; on the ROMAN CATHOLIC CHURCH; on Earl ROBERTS;

and on International Arbitration and Peace, *Bryan-Wilson Treaties*.

GREECE. A constitutional monarchy in southeastern Europe, lying between the Ionian and Ægean seas, composed of 26 nomes, or departments (exclusive of Crete and the new Turkish cession) as follows:

	Sq. km.	*Pop. 1907*	*D**
Acarnania and Etolia	5,225	141,405	27
Achaia	3,136	150,918	48
Arcadia	4,357	162,324	37
Argolis	2,585	81,943	32
Arta	1,383	41,280	30
Attica	3,127	341,247	108
Bœotia	3,117	65,816	21
Cephalonia	763	71,285	93
Corfu	681	99,571	146
Corinthia	2,370	71,229	30
Crete	8,618	344,001	40
Cyclades	2,719	130,378	48
Elis	2,014	103,800	51
Eubœa	3,895	116,903	30
Eurytania	2,322	47,192	20
Kurditsa	2,647	92,941	35
Lacedæmon	3,164	87,106	23
Laconia	1,278	61,522	48
Larissa	3,373	95,066	25
Leucas	457	41,186	90
Magesia	2,034	102,742	51
Messenia	1,674	127,991	76
Phocis	2,157	62,246	29
Phthiotis	4,622	112,328	24
Trikkala	3,055	90,548	30
Triphylia	1,593	90,528	57
Zante	410	42,502	104
Turkish cession	42,700	1,280,000	30
	115,975†	4,256,000	37

* Density. † 44,778 square miles.

Area and Population. The area previous to the war in the Balkans was given at 64,657 square kilometers (24,964 square miles), with a population in 1907 of 2,631,952. The status of the Ægean islands was still unsettled in 1914. The principal towns with their 1907 population follow: Athens, 167,479; Piræus, 73,579; Patras, 37,724; Corfu, 18,978; Volo, 23,563; Larissa, 18,041; Trikkala, 17,809; Hermoupolis, 17,773; Pyrgos, 13,690; Zante, 13,580; Calamada, 15,397; Chalcis, 10,958; Tripolitsa, 10,958; Laurium, 10,007; Syra, 18,132. In the new territory ceded by Turkey are: Salonica, 174,000; Serres, 50,000; Candia (Crete), 25,185; Cavalla, 25,000; Canea (Crete), 24,399; Drama, 19,382; Vodena, 12,500; Yannina, 20,000; Kozani, 11,000.

Production. The area under cultivation is given at about 5,563,000 acres—1,112,000 under cereals, 1,200,000 fallow, 2,025,400 under forests. There are in addition 5,000,000 acres under pasture. The principal crop is currants, with an annual average yield of 150,000 tons, which far exceeds the export; the surplus is utilized in the manufacture of denatured alcohol. A law limiting the output has resulted in the uprooting of many large plantations. The cereals grown are wheat, barley, rye, corn, and meslin. The output of currants in 1913 was 160,000 tons; olives, 1912, 40,000,000 okes (1 oke = 2.85 pounds); wheat, 1912, 4,194,446 bushels; tobacco, 86,355 cwts.; figs, 240,000 cwts.; grapes, 140,551,000 okes. There are about 30 mining concessions, covering an area of about 20,000 acres. Output of iron, 1911, 500,996 tons; iron pyrites, 35,956; manganese iron, 26,083; lead, 5602; magnesite, 27,296; sulphur, 52,025; nickel, 7893. The total imports in 1912 were valued at 154,067,000 drachmas, and the exports at 145,022,000 drachmas. From an English source come details of the 1911 and 1912 trade by great classes, value in thousands of pounds sterling.

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
Agricultural prods.	2,172	2,918	2,918	2,820
Yarn and tissues	791	981	....	....
Raw minerals	1,072	704	981	936
Forest products	488	364	158	131
Wrought metals, etc.	265	212	31	35
Chemicals	322	158	48	68
Live animals	122	31	....	....
Fishery products	305	43	36	20
Animal products	286	36	212	229
Paper, books, etc.	178	5	....	....
Wines, etc.	....	....	704	679
Olive oil, etc.	....	....	864	841
Sugar, etc.	....	....	6	5

The total imports for 1911 were valued at 172,202,000 drachmas, and the exports at 140,903,000 drachmas. The imports of Crete in 1911 were valued at 21,359,000 drachmas, and the exports at 15,631,000. Great Britain is the leading country of origin and destination, having contributed imports in the 1911 trade valued at 40,580,000 drachmas, and received 33,777,000 exports; Russia, 34,449,000 imports, and 2,601,000 exports; Austria-Hungary, 23,721,000 and 13,520,000; Bulgaria, 14,146,000 and 360,000; Germany, 13,336,000 and 16,364,000; France, 10,438,000 and 13,733,000.

In the 1910 trade, 2747 vessels, of 3,763,583 tons, were entered at the port of Piræus, and 3005, of 4,099,636 tons, cleared; this port received about three-fifths of the total shipping. In 1913, 788 sailing vessels, of 138,698 tons, and 389 steamers, of 433,633 tons, were included in the merchant marine.

Communications. There were in 1912 about 990 miles of railways in operation. The Greek government early in 1914 arranged to secure control of the railway known as La Société des Chemins de Fer Hellénique, and made a contract to connect the railway with the lines from the port of Salonika to Monastir, and from Salonika to Scopia. It was expected that the work would be finished and the new line put in operation some time in 1915, and plans were being made for the purchase of and for the necessary locomotives and other rolling stock. The contract price for the construction was $2,316,000. Telegraph lines, 1911, 5056 miles, with 10,359 miles of wire; offices, 745. Telephone lines, 1085 miles. Post offices, 1278.

Army. Military service is compulsory in Greece, and after the Balkan Wars of 1912 and 1913 the needs of an increased army were felt. The reorganization following the royal decree of August, 1913, was in progress during 1914, and six army corps were organized to consist at first of two, and later three divisions. Ordinarily the recruit serves 2 years in the active army, 11 years in the first reserve, and 9 years in the second reserve, followed by 7 years in the national guard. Each division was made up of 3 infantry regiments, each of 3 battalions, and 1 cavalry regiment, so that the army was to consist of 54 infantry regiments of 3 battalions, 12 evezone battalions, 10,000 cavalrymen, 72 field, 72 mountain, and 15 howitzer batteries. The budgetary strength of the army for 1913 was 1891 officers, 872 officials and musicians, 20,772 men, 3938 horses and mules. In war the strength of each infantry battalion of 4 companies is 22 officers, 4 staff officials, and

1080 men, of each squadron 5 officers, 1 staff official, 145 men, 150 horses; of each field battery, 5 officers, 1 staff official, 193 men, and 162 horses; and mountain artillery batteries, 5 officers, 1 staff official, 227 men, and 95 horses and mules.

NAVY. The fleet, which was reorganized in 1906, has been since 1911 manipulated under the advice of British naval officers. It included in July, 1913, 4 ironclads, 1 modern cruiser, 14 destroyers, 4 corvettes, 13 torpedo boats, 2 submarines, and miscellaneous minor craft. The *Salamis*, launched 1914, has a displacement of 19,500 tons; its principal armament is eight 14-inch guns and twelve 6-inch guns; torpedo tubes, 5; horsepower, 40,000; maximum speed, 23 knots. In the summer of 1914 the Greek navy was strengthened by the battleships *Mississippi* and *Idaho*, purchased from the United States, and renamed *Lemnos* and *Kilkis*. These are sister ships, laid down by the Cramps (Philadelphia), May 12, 1904, and commissioned one February 1, and the other April 1, 1908. The *Mississippi* was built at a total cost of $5,832,801, and the *Idaho* $5,892,821. Their displacement is 13,000 tons; mean draft, 24 feet, 8 inches; speed, 17 knots; main armament, 4 12-inch, 8 8-inch, and 8 7-inch guns.

GOVERNMENT. The executive authority is vested in a king, assisted by a responsible ministry of seven members. The King in 1914 was Constantine I, who succeeded to the throne upon the assassination of his father, George I, March 18, 1913. Heir-apparent, Prince George, born July 19, 1890. The constitution vests the legislative power in a single chamber, the National Assembly, or Boulé, consisting of 235 members elected by manhood suffrage for four years. The ministry appointed Oct. 19, 1910, was composed as follows: E. Venezelos, premier and minister of war; D. Panas, foreign affairs; K. Raktivan, justice; E. Repoulis, interior; I. D. Tsirimokos, instruction; A. N. Diomidis, finance; N. Stratos, marine; A. Michalacopoulos, national economics.

HISTORY. The events of the year 1913, which had given Greece her great accession of Macedonian territory, had also bequeathed to Greece a number of international disputes. First of all, there was the antagonism between Greece and Turkey, complicated by the refusal of Turkey to recognize Greek possession of the Ægean Islands, as well as by the alleged ill-treatment of Turks in New Greece and of Greeks in Turkey, and expressed by an intense Greco-Turkish rivalry in acquiring new warships. This Greco-Turkish crisis will be found more fully treated in the article on TURKEY. In the second place there was the bitter enmity between Greece and her former ally Bulgaria, caused by territorial jealousy, aggravated by the war of July, 1913, and stimulated both by the rumor that Bulgaria intended to join with Turkey in an attack upon Greece, and by the wholesale emigration of aggrieved Bulgars from New Greece. Finally there was the dispute as to how much of Epirus should be included within the southern boundary of the new principality of Albania. The Chauvinist element in Greece was deeply offended because the more or less Hellenic districts of Koritza and Argyrocastro had been allotted by the Powers to Albania instead of to Greece, and as the Greek troops had not yet been completely withdrawn from Albania since the Balkan War, there seemed to be an idea that by keeping her troops in Southern Albania, Greece might gain an extension of territory in that direction. The three questions just indicated formed in all probability the subject of conferences which the ever diplomatic premier Venizelos held with the governments of the Great Powers when in January and February, 1914, he paid flying visits to Rome, Paris, London, Berlin, Vienna, Petrograd, and Bucharest. Consequently when on February 13 Greece received a collective Note from the Powers (a similar Note was delivered to Turkey on the following day), it could not have been a great surprise. The Note stated that (1) on condition of the Greek troops being withdrawn from Albania by March 31, (2) the Powers would permit Greece to retain all the Ægean Islands occupied by her, with the exception of Tenedos, Imbros, and Castelorizo, which must be returned to Turkey; Greece must furthermore give guarantees that on the islands retained by her she would faithfully protect the Moslem minorities, prevent smuggling, and refrain from erecting fortifications or constructing naval bases. In replying on February 16 to the Note of the Powers, the Greek government accepted the conditions therein laid down, but protested against the inclusion of Greek districts in Albania. Subsequent negotiations obtained the consent of the Powers for a slight extension or "rectification" of the Greek frontier in the Argyrocastro region, and guarantees that the Albanian government would protect the rights of the Greeks in Southern Albania in respect of their language, their religion, and their unwillingness to be governed by Moslems. For further details regarding Albania, the reader is referred to the article on ALBANIA.

The political opponents of the Venizelos ministry did not hesitate to censure the government's foreign policy. They reviled him for yielding to the Powers in the Albanian question, they complained that the status of the Ægean Islands had not been clearly determined, they magnified the sufferings of Greeks in Turkish Thrace, and they demanded a war on Turkey before the Ottoman navy should have been reënforced by the addition of two or three dreadnoughts. Such accusations, however, were unavailing to alter the pacific determination of the cabinet. Greece had but recently acquired a large extension of territory, and it would have been disastrous to enter upon a fresh war before the new provinces had been thoroughly assimilated, and before the country had recuperated from the Balkan War. For one thing, it was highly important that the Greek railway system —and it should be borne in mind that railways are the modern "sinews of war"—should be extended into Macedonia and linked up with the Orient Railway and the general European system; this task was undertaken by a French syndicate. In order to increase the commercial importance of Salonika, and at the same time to strengthen the friendship between Greece and Servia, a commercial convention was concluded in 1914 with Servia, whereby considerable privileges were accorded to Servian commerce utilizing the port of Salonika.

The budget for 1914, laid on the table in June, showed that the national expenditures had been almost doubled in the last two years, and that the revenue from the newly acquired districts amounted to only 9,000,000 drachmas from

Crete, 66,000,000 drachmas from Macedonia and Epirus, and 10,500,000 drachmas from the Ægean Islands—some 85,500,000 drachmas, or $17,100,000. In addition to the ordinary expenditures of 220,000,000 drachmas ($44,000,000), huge sums were needed for paying the deficit of 1913, for the partial redemption of war debts, and for armament. It would therefore be necessary to contract a loan of $100,000,000, and perhaps a further loan of $80,000,000 for additional naval aggrandizement and railway extension. The budget provided that the army should be raised to a peace footing of 60,000, and a war footing of 500,000 men. The expense in 1914 would be 37,000,000 drachmas, in addition to 87,000,000 drachmas for the purchase and renewal of stores and equipment; but when the army had been raised to the indicated figures the annual cost would be 52,000,000 drachmas. For the navy 186,000,000 drachmas was appropriated in ordinary and extraordinary estimates; but this figure apparently did not include the $12,535,275.96 which was paid to the United States in July for the United States battleships *Mississippi* and *Idaho*.

At the outbreak of the War of the Nations, which in August threatened to involve all of Europe, the Opposition parties in Greece demanded neutrality. The Ministerial press was far from bellicose, but decidedly favorable to the Triple Entente. Germanophil sentiment was represented by a few of the Opposition journals, and by M. Streit, the foreign minister, who had formerly served as the diplomatic representative of Greece in Vienna. M. Streit in September resigned the portfolio of foreign affairs into the hands of the premier, M. Venizelos. When the new session of the Chamber began early in October, M. Venizelos declared that Greece intended to remain neutral unless called upon to assist her ally, Servia. He referred to the interruption by Turkey of the *pourparlers* at Bucharest (see TURKEY, *Foreign Relations*) which had promised to settle the question of the Ægean Islands. It seemed generally to be understood that in case Bulgaria should attack Servia, or in case Turkey should attack Rumania, Greece would be inclined to enter the arena, especially if the Triple Entente so desired. Meanwhile the army and the navy were being constantly exercised and held in readiness for all emergencies. The reoccupation of Southern Albania by Greek troops in October was explained as a police measure without bearing upon the international situation. See INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

GREEN, JOSEPH REYNOLDS. A British botanist and physiologist, died June 3, 1914. He was born at Stowmarket, Suffolk Co., England, and was educated at Trinity College, Cambridge, and at London University. He was senior demonstrator of physiology in Cambridge University (1885–87); Rolleston prizeman, University of Oxford (1890); was elected fellow of Downing College, Cambridge (1902); was made president of section K (Botany) of the British Association for the Advancement of Science (1902); and was professor of botany, Pharmaceutical Society of Great Britain (1887–1907). He was also lecturer in Downing College, and Hartley lecturer in vegetable physiology, University of Liverpool. In 1895 he was elected a fellow of the Royal Society; and was also a fellow of the Linnæan Society. He published: *A Manual of Botany* (1895); *The Soluble Ferments and Fermentation* (1899); *Introduction to Vegetable Physiology* (1900); "Vegetable Physiology," an article in the *Encyclopædia Britannica; Primer of Botany* (1910); *History of Botany from 1860 to 1900* (1910); and various papers on scientific subjects in the *Philosophical Transactions of the Royal Society*, and other journals. Some of his publications were translated into German.

GREENE, RICHARD GLEASON. An American editor and clergyman, died July 7, 1914. He was born at East Haddam, Conn., in 1829, and studied at Yale College in 1849. He left before graduation, however, because of the death of his father. In 1853 he graduated from the Andover Theological Seminary. After acting as pastor in several churches, he was ordained to the Congregational ministry in 1856. He filled pastorates in a number of churches in New England, New York, and New Jersey, until 1890, when he engaged in editorial work. He was editor of the *Library of Universal Knowledge;* 1st edition of the *International Cyclopædia; Columbian Cyclopædia;* and several books of reference. He wrote magazine reviews of theological and philosophical books.

GREENLAND. A Danish Arctic colony, with an estimated area of 2,200,000 square kilometers, or 849,420 square miles. The area of the settlements, the colony proper, is 88,100 square kilometers, or 34,015 square miles. The population of the colony proper in 1901 was 18,893; in 1911, 12,968. The director resides at Copenhagen. See POLAR RESEARCH, *Arctic*.

GRENADA. The most southerly of the Windward Islands group; a British colony. Attached to Grenada are some of the Grenadines, the largest of which is Carriacou, with an area of 8467 acres, containing 6886 inhabitants. Grenada covers 133 square miles, with a population (1911) of 66,750 (estimate 1912, 68,485). The capital is St. George's, with (1911) 4916 inhabitants; it is also the principal town and a port of registry, with a fine harbor. Other towns are Gouyave (Charlotte Town), Victoria (Grand Pauvre), Sauteurs, Grenville (La Baye), and Hillsborough, in Carriacou. About 2 per cent of the people are of European blood, the remainder, except for 406 East Indians in 1911, being negroes. Cacao is the chief product, the export for 1912 being valued at £225,317; spices are also exported in considerable quantities, as well as tropical fruits and foreign products. Total imports and exports for the year 1912 were valued at £279,875 and £285,590, respectively. Tonnage entered and cleared in 1912, 565,788, of which 562,461 British. Revenue and expenditure, 1912–13, £86,393 and £84,093, respectively. Customs revenue, 1912–13, £46,611. Public debt, 1912, £123,670. The Governor of the Windward Islands (Lieut. Col. Sir James Hayes Sadler) administers the colony.

GREY, SIR EDWARD. See WAR OF THE NATIONS.

GRIFFITHS, JOHN LEWIS. An American diplomat, died May 17, 1914. He was born in New York City in 1855, but at an early age removed with his parents to Indianapolis. He was educated in the collegiate and law departments of Iowa State University. He was admitted to the bar and practiced law, and in 1887 he was elected a member of the Indiana Legislature. From 1889 to 1893 he was a Supreme

Court reporter. In 1905 he was appointed American Consul at Liverpool, and in 1909 was promoted to be Consul-General at London. He held the latter post until the time of his death. In 1910 he was a delegate to the International Chambers of Commerce and Commercial Associations.

GRISWOLD, PUTNAM. An American operatic singer, died Feb. 26, 1914. He was born in California, and was employed in a shoe store in San Francisco before it was found that he had a remarkable voice. Through the generosity of Mrs. Phoebe Hearst he went to New York to study singing. For a time he sang in a church choir and later appeared in English opera under the management of Henry Savage. He then went to Germany where he took place in an opera company and sang in several provincial opera houses in that country. He was then engaged to return to the United States to sing in *Parsifal* in the company organized by Mr. Savage. He appeared as *Amfortas* at the New York Theatre. Following this he again went to Germany where he found a position in the Royal Opera House in Berlin, assuming basso rôles. He was immediately successful and was engaged by Guilo Gatti-Casazza to return to the Metropolitan Opera House. He appeared at this opera house for three successive seasons. His rôles included all the important German bass parts. He also sang in the American operas, *Mona* and *Cyrano*. He had appeared with success in the performance of a German opera at Covent Garden, London.

GRUENING, EMIL. An American surgeon, died May 30, 1914. Born in Hohensalza, Prussia, in 1842, he removed to the United States in 1862. He entered the College of Physicians and Surgeons in New York City, but interrupted his course to enlist in the Seventh New Jersey Volunteer Infantry. He took part in the siege of Petersburg, and was present at the surrender of General Lee. After the war he returned to the College of Physicians and Surgeons, graduating in 1867. He then studied abroad for three years, and in 1870 began practice in New York. In the following year he was appointed assistant surgeon of the New York Ophthalmic and Aural Institute. He served also as surgeon to the Mount Sinai Hospital and to the German Hospital. He became one of the most notable authorities on the eye and ear in the United States. His best-known achievement was the development of the mastoid operation as it is now performed. He was president of the American Ophthalmological Society and of the American Otological Society. Beside contributing many papers to medical journals on subjects connected with the eye and ear, Dr. Gruening was the first in the United States to call attention to the danger of blindness from wood alcohol poisoning.

GRUNDY, SYDNEY. An English playwright, died July 5, 1914. He was born in Manchester in 1846, and was educated at Owens College, Manchester. He studied law, and in 1869 became a barrister. Until 1876 he practiced in Manchester. In the meantime he wrote plays and novels and his writings soon became such a profitable source of income that he devoted all his time to fiction. His first book, *A Little Change*, was published in 1872, and was succeeded by many others. Among the best-known of his dramatic works were: *A Pair of Spectacles; The New Woman; A Marriage of Convenience; The Degenerates; Sowing the Wind;* and *A Bunch of Violets*. His most successful play was *Sowing the Wind*, which ran for almost seven years in England, and had also a long run in the United States. Altogether he wrote and adapted more than sixty plays. His last play was *World Without End*, written in 1914.

GUADELOUPE. A French colony composed of islands of the Lesser Antilles. These are Guadeloupe proper, Grande-Terre, La Désirade, Marie-Galante, Saint-Barthélemy, and part of Saint-Martin. The capital is Basse-Terre. The total area is 687 square miles, and the population (1911) 212,430. The name Guadeloupe is applied also to the two islands Guadeloupe proper and Grande-Terre, which are separated by a narrow channel; their area is 583 square miles, and population about 183,000. Guadeloupe proper, or Basse-Terre, has 364 square miles, and about 83,000 inhabitants. Imports, 1912, 19,524,116; exports, 26,084,302.

GUATEMALA. A Central American republic, bordering on Mexico. The capital is Guatemala City.

AREA, POPULATION, ETC. The republic is divided into 23 departments. The area is variously stated, one estimate being 48,290 square miles, and another 43,641 square miles. There is a boundary dispute with Honduras. The population, as calculated for Dec. 31, 1913, was 2,119,165; the census of Dec. 31, 1903, returned 1,842,134. About 60 per cent of the inhabitants are Indian, and most of the remainder mestizo. Births in 1912, 73,797; deaths, 43,355; marriages, 5340. Urban populations are not known accurately, but may be estimated as follows: Guatemala City, 125,000; Quezaltenango, 34,000; Cobân, 31,000; Totonicapân, 29,000; Esquintla, Chiquimula, Zacapa, and Jalapa, each about 18,000; Santa Cruz del Quiché, 17,000; Jutiapa, 16,000; Salamâ, Huehuetonango, and Antigua, each about 15,000; Amatitlân, 12,000; Sololâ, 11,000.

In 1912 there were 1837 public primary schools, with 59,631 pupils. There are a few secondary schools, a medical school, a law school, and several other educational institutions. There is no state church, and liberty of worship obtains, though Roman Catholicism is the prevailing religion.

PRODUCTION AND COMMERCE. Coffee, which is produced largely on German plantations, is commercially the most important crop. The principal food crop is corn; other crops include sugar, bananas, cacao, tobacco, and wheat. There are valuable forests in which are worked rubber, chicle, dye woods, cedar, and mahogany. Mining and manufacturing are little developed.

Imports and exports for 1912 were valued at $9,822,462 and $13,156,538, respectively; for 1913, $10,062,328 and $14,449,926. The actual invoice value of imports through the maritime customs houses in 1912 was $7,781,985, and in 1913 $7,959,326; but to these values the Guatemalan authorities add 25 per cent—an estimate covering freights, insurance, commissions, etc.—and the value of imports through frontier customhouses. This latter item is small, being only $113,171 in 1913. The maritime invoice values of leading imports in 1912 and 1913, respectively, were as follows, in thousands of dollars: Cotton textiles and manufactures, 1926 and 1734; iron and steel manufactures, 730 and 686; food products, 713 and 567; railway material, 290 and 427; wheat flour, 512 and 395; agricultural and industrial machinery, 281 and 350; wines and liquors, 341 and 348; drugs and medicines, 276 and 269; silk textiles and manufactures, 329 and 263; woolen textiles and manufactures, 300 and 253; linen, hemp, and jute textiles and manufactures, 214 and 222; petroleum, 73 and 185.

Principal exports in 1912 and 1913, respectively, in thousands of dollars: Coffee clean, 9126 and 9905; coffee in parchment, 1863 and 2350; bananas, 667 and 826; cattle hides, 190 and 455; sugar, 565 and 349; woods, 241 and 248; chicle, 275 and 142; rubber, 141 and 100.

Trade by countries, thousands of dollars:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United States	4,582	5,058	3,864	3,928
Germany	2,251	2,043	6,975	7,654
United Kingdom	1,740	1,650	1,458	1,600
France	437	402	1	21
China and Japan	303	305	....	....
Belgium	146	125	19	1
Mexico	116	111	47	78
Austria-Hungary	....	....	215	514
Total, including other	9,822	10,062	13,157	14,450

The export of clean coffee in 1913 amounted to 707,491 Spanish quintals, of which 418,393 quintals went to Germany; coffee in parchment, 209,807 quintals, of which 113,935 to Germany. The entire banana export went to the United States.

COMMUNICATIONS. San José and Champerico, on the Pacific, are connected by rail with Guatemala City, and the latter with Puerto Barrios, on the eastern coast. In 1914 the length of railway in operation was reported at 502 miles. Telegraph lines, over 4200 miles; offices, about 225. Post offices in 1912, 323.

FINANCE. The budget for the year ending June 30, 1914, showed estimated expenditure of 48,170,787 pesos paper. For the year ending June 30, 1915, 50,620,617 pesos paper. The paper peso is reckoned as approximately equivalent to one-sixteenth of an American dollar. The estimated expenditure for the fiscal year 1915 was distributed as follows: Interior and justice, 4,945,020 pesos paper; foreign affairs, 2,178,997; finance, 3,128,490; public debt, 25,211,245; fomento, 2,694,065; war, 7,609,765; public instruction, 4,209,943; miscellaneous, 583,192. Of the revenue, nearly four-fifths is derived from customs. The foreign debt, with arrears of interest, was reported to stand on Dec. 31, 1913, at £2,357,063.

GOVERNMENT. The legislative power is vested in a national assembly and a council of state. The former consists of 69 members, elected for four years by direct vote, and the latter of 13 members, in part elected by the assembly, and in part appointed by the president. The executive authority rests with a president, elected for six years by direct vote, and assisted by a cabinet of six members. The President in 1914 was Manuel Estrada Cabrera (born, 1857), who succeeded to the executive office in March, 1898, and subsequently was elected for terms ending March 15, 1905, 1911, and 1917.

Arbitration treaties with Italy and the United States were ratified by the Congress of Guatemala. See INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

GUIANA. See BRITISH GUIANA, DUTCH GUIANA, FRENCH GUIANA.

GYMNASTICS. The sixteenth annual intercollegiate gymnastic championships were won by New York University with a score of 17 points. The University of Pennsylvania was second with 15 points, and Princeton third with 8½ points. Other scores were: Yale, 8; Haverford, 6; Rutgers, 5; Amherst, 1½; Harvard, 1. The all-around title went to Cremer of New York University, with Clark of the University of Pennsylvania second. Dual college meets resulted as follows: New York University 33½, Yale 20½; New York University 39, Columbia 15; New York University 26½, Rutgers 14½; New York University 20, United States Naval Academy 34. Princeton 42, Columbia 14; Princeton 29, Pennsylvania 25. Yale 29, Rutgers 25; Yale 30, Princeton 24. Pennsylvania 35, New York University 19; Pennsylvania 34, Haverford 20. Naval Academy 34, Pennsylvania 20; Naval Academy 37½, Columbia 13½. The western intercollegiates were won by the University of Wisconsin, with the University of Chicago second. The individual championship winner was Replinger of Wisconsin.

The club championships of the A. A. U. resulted as follows: Horizontal bar, Franz Kanis, Newark Turn Verein; rope climb, 25 feet, Edward Lindenbaum, Young Men's Hebrew Association; parallel bars, Franz Kanis, Newark Turn Verein; club swinging, Ray W. Dutcher, New York Athletic Club; side horse, Franz Kanis, Newark Turn Verein; tumbling, Melvin J. Bedford, National Turn Verein; flying rings, J. Duncan Gleason, New York Athletic Club; all-around, Franz Kanis, Newark Turn Verein.

GYPSY MOTH. See ENTOMOLOGY.

GYRO COMPASS. See SUBMARINES.

HAGGIN, JAMES BEN ALI. An American capitalist and sportsman, died Sept. 12, 1914. He was born at Harrodsburg, Ky., in 1827, and was educated for the law. He was admitted to the bar and opened an office first at St. Joseph, Mo., and later at Natchez, Miss. He remained in this city until 1849, when he went to California with the Forty-niners. In San Francisco he engaged in the real estate business and in mining enterprises, and rapidly acquired a fortune. He was associated with Lloyd Tevis. From small beginnings they expanded their landed interests until they had acquired more than 120,000 acres, with a value estimated from $20,000,000 to $40,000,000. Mr. Haggin's influence in California in early days was great and it was largely through his efforts that irrigation was employed in the development of agriculture in that State. He also acquired a large amount of property in New York City. In his later years Mr. Haggin became best known as a breeder of horses and a devotee of the race tracks. He was generally regarded as the foremost breeder of thoroughbreds in the United States. At one time he operated two extensive breeding establishments in California and Kentucky. Some of the greatest race horses known to American racing came from these farms. Among the famous horses owned by him were Waterboy, Nasturtium, and Hamburg Belle. In addition to his other interests, Mr. Haggin was one of the organizers of the so-called "Silver Trust" in 1906. He also developed extensive copper mines in Anaconda, Mont., which gave employment to 3000 men. He owned the famous

Homestead gold mine in Deadwood, S. Dak., and mines in Arizona and California.

HAGUE TRIBUNAL. See INTERNATIONAL ARBITRATION AND PEACE.

HAIG, SIR DOUGLAS. See WAR OF THE NATIONS.

HAITI. A republic occupying the western part of the West Indian island of Haiti. The capital is Port-au-Prince.

AREA, POPULATION, ETC. The area is estimated at 28,676 square kilometers (11,072 square miles). The country is densely populated, though the number of inhabitants cannot be stated with accuracy. According to an estimate of 1909, based on parish registers, the population was about 2,030,000. In 1912 the number was estimated at 2,500,000. Negroes constitute probably 90 per cent of the people, and most of the remainder are mulattoes. Varying estimates are made for the urban populations. Port-au-Prince, the largest city, is estimated to have 100,000 inhabitants; Cap Haïtien, 30,000; Les Cayes, 25,000; Gonaïves, 18,000. Instruction has been nominally compulsory since 1910, but the educational system is imperfect, and illiteracy prevails. The people speak a French patois and profess Roman Catholicism.

PRODUCTION AND COMMERCE. The people are mainly engaged in agriculture. There are few manufactures of commercial importance, and mining is almost entirely undeveloped. Valuable crops are cacao, sugar-cane, tobacco, cotton, and coffee, the last being by far the most important. The coffee crop in 1914 was estimated at 87,660,000 pounds. From sugar-cane considerable quantities of rum are distilled. The forests yield logwood and other valuable woods for export. The value of imports, as reported for the fiscal year 1911, was $7,948,117, and of exports $15,475,331; for 1912, $9,876,555 and $18,734,275; for 1913, $8,100,125 and $11,315,559. Of the 1913 importation, the United States furnished the value of $5,908,956; France, $817,335; United Kingdom, $595,319; Germany, $535,544; other countries, $242,971. The greater part of the exports goes to France. For 1913 the total coffee export was reported at 56,962,000 pounds; cotton, 4,266,000 pounds; cacao, 3,898,000 pounds. Vessels entered at the ports in 1913, 1142 steamers, of 2,244,847 tons, and 52 sail, of 31,918 tons.

COMMUNICATIONS. There are about 140 miles of railway (including light railway), while some 250 miles are reported as under construction. Completion of the latter mileage, however, is conjectural. In 1910, there were 124 miles of telegraph line; post offices (1911), 88.

FINANCE. Customs receipts constitute the greater part of the revenue. Import and export duties are paid in American gold. The paper gourde, nominally equivalent to about 96.5 cents, is current at about one-fourth its face value. For the fiscal year 1913, the estimated revenue was $3,914,480 and 7,571,083 gourdes, and the estimated expenditure $3,904,291 and 9,095,006 gourdes; for the fiscal year 1914, estimated revenue $5,078,754 and 4,898,680 gourdes, and estimated expenditure the same as for 1913. The larger estimated disbursements were in thousands of dollars and of gourdes: for the public debt, 2802 and 331; interior and police, 315 and 1314; war and marine, 231 and 2380; instruction and worship, 132 and 1860; finances, 66 and 1187. The public debt, including arrears, amounted on July 1, 1914, to $25,892,181 and 13,534,812 gourdes.

ARMY. Haiti maintains a regular army varying in strength with the exigencies of the government and the strength of the ruling officials. Any figures given as to the organization must be more or less of a conjecture, but the available armed forces probably do not exceed 3000 men at any time.

GOVERNMENT. The legislative power is exercised by a national assembly consisting of the Senate (39 members) and the Chamber of the Communes (96 members). Members of the Chamber are elected for three years by direct vote (one member from each commune). The Senators are elected by the Chamber for six years, from a list prepared in part by the President and in part by the electors. According to the constitution, the President is elected for a term of seven years by the two chambers in joint session. Gen. Cincinnatus Leconte, President for the term ending May 15, 1918, lost his life in a fire which destroyed the executive residence Aug. 8, 1912. His successor was chosen in the person of Gen. Tancrède Auguste for the term ending May 15, 1919. General Auguste died May 2, 1913, and on May 4 Sen. Michel Oreste was elected President for the unexpired term. A revolutionary outbreak occurred in January, 1914, under the leadership of Davilmar Théodore, former President of the Senate, and Gen. Oreste Zamor, provincial authority at Cap Haïtien, who had been Minister of War in 1911. On January 27 President Oreste fled for safety to a German warship, and on February 8 General Zamor was elected to succeed him.

HISTORY. The revolutionary disturbances which had been comparatively insignificant in the latter part of 1913 took on a more serious complexion in January, 1914. Under the leadership of Sen. Davilmar Théodore a new insurrectionary movement arose in the north. So rapid was the progress of the rebellion, that Cap Haïtien and Gonaïves were speedily captured and the march on the capital begun. In fear of his life, President Michel Oreste on January 27 abdicated, took refuge on board the German cruiser *Vineta*, and made his way ultimately to New York. Immediately marines were landed from the United States armored cruiser *Montana*, and from the German cruiser *Vineta* to prevent rioting in Port-au-Prince. Within a few days a British contingent from the *Lancaster*, and a French landing party from the *Condé* joined the German and American marines, while a United States battleship was rushed to the spot as an additional precaution. No sooner had the rebellion triumphed than dissensions appeared in the rebel ranks, and Senator Théodore was compelled to retire to Cap Haïtien after having sustained a severe defeat at Gonaïves on February 2 at the hands of his rival for the presidency, Gen. Orestes Zamor, who had formerly held the post of Governor of the Northern Department, and in 1911 had been minister of war. General Zamor was a full-blooded negro, whereas Senator Théodore sprang from mulatto stock, and was financed by ex-President Antoine Simon. Reorganizing his forces at Cap Haïtien, and proclaiming himself President, Senator Théodore set up a provisional government in that city and prepared for a decisive conflict with his rival. General Zamor in the meantime entered Port-au-Prince on February 7 amidst the acclamations of the populace. The new Congress, which had been elected January 10, and had held its inaugural session January 26, was now convoked in joint session with the upper chamber for the purpose of electing a president, February 8. As was to be expected, General Zamor, already dictator in fact, received a large majority of the votes cast—95 out of 105; and assumed the title of provisional president. In his cabinet, the new provisional president included: as minister of foreign affairs, J. N. Léger; finance, Edmund Lespinasse; public works, Gen. Beaufossé Laroche; interior, Gen. Carlos Zamor; education, M. Dalencour; war and marine, General Etienne. With his army of about 2000 men, President Zamor marched against Cap Haïtien, simultaneously dispatching three small warships to the same point. He easily routed the rebel army, put Théodore to flight, February 21, and entered Cap Haïtien in triumph. On February 24 the government forces recaptured Trou from the adherents of Senator Théodore; on March 20 yet another defeat was administered to the Senator's forces at Grand Bassin. Even before these victories had assured his position, General Zamor received the recognition of the United States, although President Wilson's refusal to recognize Huerta's "blood-stained" government in Mexico had led to the expectation that a revolutionary government in Haiti would wait long for recognition. In his dealings with the European Powers, General Zamor was not so successful. First a French warship came to demand the immediate payment of interest due to the French creditors of the negro republic. The success of the French experiment in the use of warships as debt collectors induced the German government to follow suit. Great Britain made a tardy third in the troublesome trio of creditors, demanding on May 6 under threat of force, the payment of $62,000 claimed by a British subject as compensation for a sawmill which had been destroyed during the Leconte revolution. Against the British claim, the government of Haiti most strenuously and unavailingly protested, but no time was lost in satisfying the demands. In order to finance his administration, General Zamor had to place himself still more deeply under obligations to German financiers, with the result that in June strong pressure was brought to bear upon him to place the customs administration under foreign control. In the American press it was persistently urged that the United States should exercise the same sort of financial protectorate over Haiti as over the other half of the island, collecting the customs, satisfying the foreign creditors, and turning the balance over to the native government. But Germany and France, whose share in the Haitian debt exceeded that held by the United States, were not disposed to allow the establishment of any other than an international financial protectorate over Haiti. While Haitian affairs were thus hanging in the balance, the United States prepared for all eventualities by sending a battleship to Port-au-Prince, and stationing 700 marines at Guantanamo, Cuba, within easy striking distance of the turbulent republic. A new outburst of revolutionary activity in June was followed by considerable fighting in July, but no signal success was scored by the adversaries of President Zamor until October, when Davilmar Théodore, having gotten control of the government gunboat *Nord Alexis*, was able to establish himself again in Cap Haïtien. For a second time Sen. Davilmar Théodore proclaimed himself president. On October 30 President Zamor fled to Curaçao. The United States at once ordered the battleship *Nebraska*, and the transport *Hancock* to Port-au-Prince for the protection of American interests during the interregnum. Following the practice of his predecessor, Davilmar Théodore had no sooner made himself military master of the country than he sought constitutional sanction for his rule; on November 7 the Congress went through the form of electing him, Théodore, president. The following day the United States marines returned on shipboard. President Théodore inherited the financial embarrassments of the foregoing president, but the chief difficulty was now with the United States; for, if credence is to be given to a report which was circulated late in December, Secretary Bryan was endeavoring to reduce the Haitian government to financial impotence by preventing the negotiation of new loans, as well as by holding in the United States half a million dollars in gold which had been removed to New York by the National Bank of Haiti, although it had been deposited by the Haitian government. For further information regarding Haiti, consult the article INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*, and the article on the UNITED STATES.

HALL, CHARLES BADGER. An American soldier, died May 11, 1914. He was born in Portland, Me., in 1844, and graduated from the Portland High School in 1862. In the same year he became second lieutenant of the Twenty-fifth Maine Volunteer Infantry and served through the Civil War. He was brevetted first lieutenant "for gallant and meritorious services," and received also the brevet of captain. He was honorably mustered out of service in 1865, and in 1867 became second lieutenant of the Twenty-eighth United States Infantry. He received successive promotions until in 1908 he was appointed major-general. He was a member of several military and patriotic societies.

HALL, EDWARD JULIUS. An American telephone official, known as the "father of the long-distance telephone," died Sept. 17, 1914. He was born in Perth Amboy, N. J., in 1853. When he was 13 years of age he removed with his parents to Buffalo, where he was educated in the schools of that city, and in 1873 graduated from the Sheffield Scientific School, Yale University. He at once became manager of his father's terra cotta and firebrick plants, at the same time acting as an editor for a Buffalo paper and performing duties as organist in a church of that city. The invention of the telephone was of much interest to him. When the parent company of the Bell system was organized in 1877, he organized a local operating company in Buffalo, holding offices as vice-president and manager. In 1885 he was made manager of the American Telephone and Telegraph Company, organized in that year, a year before an experimental long-distance line had been tried between New York and Boston. Mr. Hall took up the development of the long-distance telephone line and within two months was directing the work of the first long-distance line between New York and Philadelphia. The rapid development of long-distance transmission was due largely to his efforts.

HALL, Richard Nicklin. An English archæologist, died Nov. 20, 1914. He was born in 1853, in Dudley, Worcestershire, and was educated at Birmingham and at Kinver College. He studied law and for a time was a solicitor in the High Court of Judicature in Rhodesia. He afterwards acted as political agent and as secretary of the Rhodesia Landowners and Farmers Association. He was for a time editor of the Matabele *Times* and representative in Rhodesia for several London papers. In 1899 he was Commissioner for Rhodesia at the exhibition in London, and again at the time of the Glasgow exhibition in 1901. In 1902 he was engaged by Cecil Rhodes to explore the ruins of the Great Zimbabwe on behalf of the Rhodesian government. This was his most noteworthy achievement. In 1909 he traveled alone for five months down the Sabi and Lundi Rivers, collecting ethnological information. In 1910 he became editor of the Rhodesia *Journal.* He was a fellow of many European and South African societies. His published writings include *The Ancient Ruins of Rhodesia,* and *Great Zimbabwe.* He was also the author of *Pre-Historic Rhodesia* (1908). He lectured before the British Association on the Archæological Remains in Rhodesia.

HAMILTON, William Reeve. An American army officer and writer, died Sept. 16, 1914. He was born at Fond du Lac, Wis., in 1855. After studying for one year at the University of Wisconsin, he was appointed to the United States Military Academy, graduating in 1876. In the same year he was appointed second lieutenant. From 1879 to 1883 he was professor of military science at Asbury University, and from 1894 to 1897 was professor of military science and tactics at the University of Nevada. In the former year he graduated from the Artillery School. During the Spanish-American War he was in charge of the siege artillery train. From 1899 to 1901 he was in command at Fort Schuyler, N. Y., and from 1901 to 1903 at Fort Terry. He was appointed captain in 1898, major in 1903, lieutenant-colonel in 1907, and colonel (retired) in 1909. His published writings include: *Elementary Principles Connected with the Art of War* (1887); *Practical Instructions for the National Guard* (1889); *Decisions on Upton's Tactics* (1886); *Rank of Knights of Pythias* (1883); *Our Young Soldiers* (1888); *Cadet Days* (1885); *The United States Army Retired List* (1900); *The Gunner's Catechism* (1902).

HAMILTON COLLEGE. An institution for higher learning, in Clinton, N. Y., founded in 1812. There were enrolled in the several departments in the autumn of 1914, 190 students, and the faculty numbered 20. No noteworthy benefactions were received during the year. The productive funds of the college amount to about $1,200,000, and the library contains about 67,000 volumes. During the year Prof. William J. Miller of the chair of geology resigned to accept a chair in Smith College, Nathan Clark Dale being appointed associate professor in geology to succeed him. The president is M. W. Stryker, D.D.

HAMPTON NORMAL AND AGRICULTURAL INSTITUTE. An institution for the education of negroes, founded at Hampton, Va., in 1868. The enrollment in all departments of the university in the autumn of 1914 was 1309, and the faculty numbered 130. There were no important changes in the faculty during the year, and no noteworthy benefactions were received. The productive funds of the university for the fiscal year ending June 30, 1914, amounted to $2,709,344, and the annual income from all sources amounted to $408,786. The library contained about 35,000 volumes. The president is H. B. Frissell, D.D.

HARBORS. See Docks and Harbors.

HARDWICK, Thomas William. An American public official, elected in 1914 United States Senator from Georgia. He was born in Thomasville, Ga., in 1872, and graduated from Mercer University in 1892. In the following year he was admitted to the bar and from that time was engaged in practice at Sandersville, Ga. From 1895 to 1897 he was prosecuting attorney of Washington Co., and from 1898 to 1901 was a member of the Georgia House of Representatives. In 1903 he was elected to the Fifty-eighth Congress and was reëlected to successive Congresses up to and including the Sixty-third. On Sept. 2, 1914, he was nominated by the State Democratic Convention to fill the unexpired term of the late Senator A. O. Bacon (q.v.), and on November 3d was elected to the United States Senate by the people for the term ending March 3, 1919.

HARJES, John H. An American financier, died Feb. 15, 1914. He was born in Philadelphia in 1830, and in 1868 left that city to found the bank of Drexel, Harjes & Co. in Paris. This bank later became Morgan, Harjes & Co., and was the French branch of the firm of J. P. Morgan & Co. He retired from this firm in 1909, after sixty-three years of business activity. He was regarded as one of the strongest men in the French financial world. For more than thirty years he managed the famous bank of Morgan, Harjes & Co., where international loans and the financial affairs of the world were discussed in secret conference. Mr. Harjes was an art collector of fine judgment, and was a familiar figure in the American colony in Paris. Many years ago he presented a statue of Benjamin Franklin to the city, and it was erected in the Place du Trocadéro. He was an officer of the French Legion of Honor.

HARPER, Robert Francis. An American Assyriologist, died Aug. 6, 1914. He was born in New Concord, Ohio, in 1864, and was educated at Denison and Muskingum Colleges, and at the University of Chicago, graduating from the latter institution in 1883. He then took post-graduate courses at the University of Leipzig, receiving the degrees of A.M., Ph.D., in 1886. In the same year he was appointed instructor in Semitic languages at Yale. This position he held until 1886, and again from 1889 to 1891. In 1888–89 he was Assyriologist of the Babylonian Exploration Fund of the University of Pennsylvania, and filled the same post for the British Museum in 1891–92. From 1892 to 1900 he was associate professor of Semitic languages and literatures at the University of Chicago. In the latter year he was appointed full professor of this chair. From 1907 until the time of his death he was editor of the *American Journal of Semitic Languages.* He was also associate editor of the *Biblical World and the American Journal of Theology.* He was director of the expedition to Babylonia of the Oriental Exploration Fund from 1903 to 1906. He was curator of the Haskell Oriental Museum from 1900 until the year of his death, and in 1908–09 was director of the American School for Oriental Study and Research in Palestine. He was a member of several geographical and archæological societies. His published writings include: *Assyrian and Babylonian Letters Belonging to the Kouyunjik Collections of the British Museum* (1892–1913); *Babylonian and Assyrian Literature* (1901); *The Code of Hammurabi* (1904). He edited with Francis Brown and George F. Moore *Old Testament and Semitic Studies in Memory of William Rainey Harper* (2 vol., 1908).

HARVARD UNIVERSITY. The total number of students enrolled in the several departments of the university in the autumn of 1914 was as follows: College, 2473; Graduate School of Applied Science, 121; Graduate School of Arts and Sciences, 524; Graduate School of Business Administration, 154; Divinity School, 63; Law School, 727; Medical School, 320; Dental School, 301. The total, including the university extension students, was 5407, and the officers of instruction and administration numbered 803, of whom 141 were professors, 9 associate professors, 86 assistant professors, and 78 lecturers. The productive funds of the university in the collegiate year 1913 amounted to $27,797,004, and the income to $1,363,699. The library contains 1,121,036 volumes, and 680,078 pamphlets. (For the gifts and bequests received by the university during the year, see the article Gifts and Bequests; and for further notes in regard to the work of the university in general, see article Universities and Colleges.) The president is Abbott Lawrence Lowell, Ph.D., LL.D.

HAUPTMANN, Carl and Gerhart. See German Literature.

HAWAII. Population and Immigration. The estimated population of Hawaii on June 30, 1914, was 227,391, and in 1910, 191,909. The 90,000 Japanese form by far the larger part of the population; of Hawaiians there are about 25,000; Portuguese, 23,000; Chinese, 21,000; of Americans, British, Germans, and Russians, about 16,000; Filipinos, about 15,000; and of part-Hawaiians, about 14,000. Among the pure Hawaiians there has been a steady decrease for many years, due to an excess of deaths over births, while on the other hand the part-Hawaiians have steadily increased. The Chinese are gradually decreasing in numbers, while the Japanese have increased. The most rapid increase in 1914 was among the Filipinos, who were introduced by the Hawaiian Sugar Planters' Association.

The scarcity of labor in the islands has made it necessary to stimulate immigration in order to supply the demands of the sugar plantations and other agricultural industries. During 1914 nothing was done toward the further introduction of Europeans accustomed to agricultural pursuits, as the inducements offered this class of labor in the Territory have not warranted any further effort, and the outlook for the agricultural interests has become such as to make the introduction of even small parties of desirable immigrants unwarranted. The most considerable immigration in recent years has been that of Filipinos, nearly 17,000 of whom have been brought to the islands by the sugar planters.

Agriculture. The Territory of Hawaii is practically a two-crop country. It produces a varying per cent of perishable articles for local consumption, but sugar and fruit raising are by far the leading industries; the chief fruit product has in recent years been canned pineapples. This industry has had such rapid growth that in 1914 it outstripped the means of caring for the field product. The exports of sugar in 1914 amounted to 1,089,389,928 pounds of raw sugar, valued at $32,108,518, and 25,499,374 pounds of refined sugar, valued at $1,086,394, being a decrease of about $3,000,000 in the value of raw sugar over 1913. The fruits and nuts exports in 1914 were valued at $5,061,525, compared with a value of $4,055,622 in 1913. Among other agricultural products are rice and coffee, of which latter 5,505,240 pounds were exported in 1913. The rice is grown chiefly for local consumption, and is raised by the Chinese, Japanese, and Portuguese. The growing of live stock is of considerable importance, most of the meat being consumed in the islands, where the presence of a large proportion of Orientals makes the pork industry important. The United States Department of Agriculture makes a rigid inspection of all imported animals, and a Federal experiment station is maintained, the main energies of which are devoted to research work in problems which have arisen in Hawaiian agriculture.

Commerce. The total imports for the fiscal year 1914 amounted to $35,550,257, and the exports to $41,594,072; the imports were practically the same as those of 1913, and the exports showed a decrease of about $2,000,000. Of the imports, $29,267,699 came from the United States, and $6,282,558 from foreign countries. Of the exports, $40,678,827 went to the United States, and $915,245 to foreign countries. The greater part of the imports from foreign countries is from Japan, followed by British India, Germany, United Kingdom, and China. The largest amount of foreign exports are to Germany. The following table gives the aggregate of exports and imports for the fiscal years 1913–14:

	Imports		*Exports*	
Countries	*1913*	*1914*	*1913*	*1914*
Australia and Tasmania	$467,078	$569,287	$14,979	$2,956
Other British Oceania	89,884	89,951	7,918	14,404
British India	844,078	950,804	......	992
Canada	24,144	21,677	64,201	88,525
Chile	708,626	832,810	......	12
France	25,241	15,524	18,697	27,889
Germany	424,560	696,197	97,715	118,755
Hongkong	393,294	369,887	6,686	28,761
Japan	2,845,756	2,516,468	118,941	20,491
United Kingdom	797,839	468,006	144,352	70,026
Other foreign	303,081	302,952	290,157	547,484
Total foreign	6,873,531	6,282,558	758,646	915,245
United States	29,129,409	29,267,699	42,718,294	40,678,827
Grand total	36,002,940	35,550,257	43,471,940	41,594,072

TRANSPORTATION. The islands are dependent to a large extent upon the development of their transportation facilities. In the fiscal year 1914, 305 vessels were engaged in the coastwise trade, and 142 in foreign trade. The total tonnage of vessels cleared in coastwise trade was 941,228, and in foreign trade 701,330. Traffic between the islands is conducted chiefly by the Interisland Steam Navigation Company, which operated in 1914, 16 steamers. Traffic between Hawaii and the Atlantic coast of the mainland is largely in the hands of the American-Hawaiian Steamship Company, which operates 26 steamers of the highest class of freighters. The bulk of the trade with the Pacific coast is handled by the Matson Navigation Company, which operates a fleet of 7 freight and passenger steamers. There are four through steamship lines, besides the United States army transports, which touch regularly at Honolulu on their voyages between San Francisco and the Philippines. The steam railroads of the islands had a mileage in 1914 of 296. The largest mileages are in the islands of Oahu and Hawaii. The only street railway is at Honolulu. This in 1914 carried 12,263,402 passengers, and expended for road construction $378,707. At the close of the fiscal year there were 3035 licensed automobiles in the Territory.

EDUCATION. The total number of pupils in the 168 schools in 1914 was 26,990, and there were 713 teachers. There was paid for the maintenance of the schools $742,310. Of those attending school by far the largest number are Japanese, followed by Portuguese, Hawaiians, part-Hawaiians, Chinese, and 1403 American children.

FINANCE. The bonded debt of the State at the close of the fiscal year 1914 was $6,844,000, and the total receipts from all sources for the fiscal year amounted to $3,768,468, and the disbursements to $4,687,545. There was a cash balance at the beginning of the fiscal year of $716,729, and at the end of $366,001. The principal tax is the general property tax, but there is a specific property tax on carriages, carts, bicycles, automobiles, etc., which goes to the counties for road purposes. There is a poll tax of $1, and the general income tax, which goes to the Territory for general purposes, is 2 per cent on incomes in excess of $1500.

PUBLIC HEALTH. During the year the general health conditions of the Territory were good, and no serious epidemics occurred. A number of improvements were made in the leper settlement on the island of Molokai, the leper hospital, and the homes for nonleprous boys and girls of leprous parents in Honolulu; these constitute the four institutions maintained in connection with the treatment of this disease. There were at the end of the year 666 lepers, 409 males and 257 females. Rat and mosquito campaigns were prosecuted at Honolulu and Hilo with good results.

POLITICS AND GOVERNMENT. The Legislature did not meet in 1914 as the sessions are biennial and the last was held in 1913. The Governor in his annual report recommends the revision of the land laws of the Territory, and also calls the attention of Congress to the Kilauea National Park. The officers in 1914 were as follows: Governor, L. E. Pinkham; Secretary, W. W. Thayer; Attorney-General, I. M. Stainback; Treasurer, D. L. Conkling; Commissioner of Public Lands, J. D. Tucker; Superintendent of Public Instruction, H. W. Kinney; Superintendent of Public Works, C. R. Forbes; Auditor, J. H. Fisher.

The Hilo Railroad operates about 72 miles of line on the island of Hawaii, and is the only standard gauge railway in the Territory.

HAWKINS, JOHN PARKER. An American soldier, died Feb. 7, 1914. He was born in Indianapolis, Ind., in 1830. He studied for two years at Wabash College, and was then appointed to the United States Military Academy from which he graduated in 1852. He served throughout the Civil War, chiefly in the commissary department, and as commander of volunteers. He was made brigadier-general in 1863, and was honorably mustered out of service in 1866. In 1874 he was appointed major in the commissary department and was later appointed lieutenant-colonel, and in 1892 brigadier-general. He was retired by operation of law in 1894. He received brevets of major, lieutenant-colonel, colonel, brigadier-general, and major-general during the Civil War for gallant and meritorious services.

HAY. Data on the world's production of hay are not published, but reports from many countries on the condition of hay crops through the season indicated about an average yield. In the United States and Canada dry weather reduced the yield to some extent, although late rains were beneficial, especially to the second cutting. The crop was better than in 1913, and was also better distributed. The yield of alfalfa hay, especially that of the first cutting in the principal alfalfa-growing sections of the Mississippi Valley was quite satisfactory. On account of the war, data on European hay production were not generally available. England and Wales reported a yield in 1914 of 2,120,919 tons from grass and other hay crops under rotation, and of 5,148,929 tons from permanent meadows, or a total of 7,269,848 tons. The area in temporary meadows was 1,554,907 acres, and in permanent meadows 4,785,626 acres, the average yields per acre being 27.28 and 21.52 cwts., respectively. As reported by the Department of Agriculture, the United States produced in 1914 70,071,000 tons on 49,145,000 acres, the average yield being 1.43 tons per acre. In 1913 the production was 64,116,000 tons on 48,954,000 acres, with an average yield per acre of 1.31 tons. The total value of the crop of 1914, based on a ton value of $11.12, the average price received by farmers on December 1, was placed at $779,068,000, as compared with a ton value of $12.43 and a total crop value of $797,077,000 the year before. The Canadian hay crop of 1914, according to the Census and Statistics Office of the Dominion of Canada, amounted to 10,477,400 tons as against 11,096,770 tons in the preceding year. The demand arising through the European war increased Canadian exports of hay to a considerable extent, and also influenced the price.

HEALTH. See HYGIENE.

HEALTH RESORTS. See HYDROTHERAPY; SARATOGA SPRINGS.

HEATON, SIR JOHN HENNIKER. An English public official, died Sept. 8, 1914. He was born in Rochester, England, in 1848, and was educated at Kent House School, and at King's College, London. At the age of sixteen he left England to seek his fortune in Australia. He became a landowner in that country and part proprietor of several newspapers. He returned to England in 1885, and was elected to the House of Commons as member for Canterbury, a seat which he continued to hold until he retired from Parliament at the end of 1910. In the first year of his Parliamentary career he moved a resolution in the House of Commons inviting the Government to enter into negotiations with other Governments with a view to the establishment of a universal system of penny postage. The motion was opposed by the Government on financial grounds and was defeated. He continued his efforts, however, to bring this about, and at the same time advocated many other reforms in the administration of the Post Office. Some of these demands were conceded from time to time, but he was still able to present to the Postmaster-General in 1910 a budget of 62 reforms, which he regarded as indispensable to the ideal post office. After the rejection of his plans for penny postage by the House of Commons he preached a crusade throughout the world in favor of postal reform, and in particular of universal cheap postage. In 1908 his efforts were rewarded by the initiation, though not at once by the completion, of penny postage throughout the British Empire. Heaton at once began another campaign for the adoption of penny postage by other countries. His first and greatest triumph was the adoption of penny postage between the United States and England in 1908, and was followed by its adoption in other countries. Sir Henniker Heaton's energies were also directed to the improvement and cheapening of international telegraphy, especially of oceanic telegraphy, and to the further development of the telephone, and his efforts were crowned with a large measure of success. He introduced the telegraph money orders in England, and the parcel post in France. In 1899 the freedom of the City of London was conferred upon him. His published writings include: *A Short Account of a Canonization at Rome; The Manners and Customs of the Aborigines of Australia; Australian Dictionary of Dates and Men of the Time.*

HEERINGEN, JOSIAS O. O. See WAR OF THE NATIONS.

HEGAR, ALFRED. A German gynecologist, died at Freiburg on Aug. 6, 1914, at the age of 84. He was made professor of gynecology at Freiburg in 1864, and remained there until 1904 as the regular professor and director of the gynecologic clinic. His publications cover the entire field of modern gynecology, of which he is regarded as the founder. A number of his treaties are closely related to psychology and social medicine. In collaboration with his pupil, Kaltenbach, he wrote a standard work on operative gynecology; and in advanced age he founded a journal entitled *Beiträge zur Geburtshilfe und Gynäkologie.*

HEIGHT OF BUILDINGS. See ARCHITECTURE; and TALL BUILDINGS.

HEINZE, FRITZ AUGUSTUS. An American capitalist and mine operator, died Nov. 4, 1914. He was born in Brooklyn in 1869, and after several years spent in study and travel, graduated from the Columbia School of Mines in 1889. He then went to Montana and obtained work in the copper mines of Butte. For two years he worked in these mines as a day laborer. He, with his brother, made a careful examination into the titles of the companies held by the Amalgamated Copper Company in Butte, and on account of the carelessness shown in staking mining claims and preparing leases, he was able to lay claim to several important ore bodies. He had in the meantime formed a corporation known as the Montana Ore Purchasing Company, and many suits were brought against him by the Amalgamated Company. Most of these suits he won, but for many years Heinze was involved in fierce struggle with Marcus Daly, the late Henry H. Rogers, and other men representing the interests and control of the Amalgamated Copper Company. The litigations were finally settled by the payment of a large sum, said to be $10,000,000, to Heinze for his interests. In 1902 he organized the United Copper Company, and three years later removed to New York City with the intention of engaging in the banking business. He established the firm of Otto C. Heinze & Co., which included his two brothers, and bought control of the Mercantile National Bank and became its president. By various manipulations he soon obtained control of a chain of banks. Hardly had he become established, however, when the panic of 1907 occurred. About the same time Heinze, as a speculative enterprise, endeavored to make a corner in United Copper stock. Great quantities of this stock were thrown into the market and were bought by firms commissioned by Heinze's company. The company was unable to pay for these and the brokerage house was suspended by the Stock Exchange. The Clearing House committee compelled Heinze to resign from the Mercantile National Bank presidency, and began an investigation of its affairs. As a result of this investigation Charles W. Morse, O. F. Thomas, and E. R. Thomas, who were also officials of the bank, were obliged to resign. Largely as a result of these transactions Charles W. Morse was found guilty of misuse of the funds and spent a term in prison. Heinze was arrested for over-certifying checks. He was acquitted, and then returned to Butte. During the last few years preceding his death he did not take an active part in financial matters. He was defendant in several suits, and several days before his death had appeared in court as a witness in a suit brought against him.

HELL GATE BRIDGE. See BRIDGES.

HEMORRHAGE, INTESTINAL. See SERUM THERAPY.

HENSON, POINDEXTER SMITH. An American clergyman and writer, died April 24, 1914. He was born in Fluvanna Co., Va., in 1831, and graduated from Richmond College in 1848. In 1855 he was ordained to the Baptist ministry. He was pastor of the Broad Street Church in Philadelphia from 1861 to 1867, of the Memorial Church in the same city from 1867 to 1882, and of the First Church in Chicago from 1882 to 1901. From 1901 to 1903 he was pastor at the Hanson Place Church in Brooklyn, and was pastor at the Tremont Temple, Boston, from 1903 to 1908. From 1867 to the time of his death he was editor of the *Baptist Teacher.* He wrote the *Bible Text Book of Christian Doctrine* (1892); and *The Royal Scroll* (1896). He received the degree of D.D. from Bucknell University, and that of LL.D. from Richmond College.

HEREDITY. See ALCOHOL; ZOÖLOGY.

HERKOMER, SIR HUBERT VON. An English artist, died March 31, 1914. He was born at Waal, Bavaria, in 1849. His parents removed to the United States when the boy was two years of age. In 1857 they removed to England and settled in Southampton. The father framed and cleaned pictures for a living, while the mother taught music. Hubert assisted the family in his early years by playing the piano. He began to show artistic taste while still a boy, and it was decided that he should become a painter. A commission from Munich enabled the family to remove to that city, and there Professor Echter gave to Hubert his first technical instruction in art. When his mother and father returned to England in 1866 the boy returned with them and began to study at the South Kensington School. There his work showed great merit and promise, and in the same year he became a regular contributor to the *Graphic*, and some of his pictures received recognition at exhibitions. "Hoeing" was given the place of honor at the Dudley exhibition in 1870, and three years later the Royal Academy hung his "After the Toil of the Day." Perhaps his best-known work, "The Last Muster," was painted in 1875. This picture immediately won recognition, and the jury which hung it applauded it—an extremely unusual procedure. The painting was later sent to Paris to be exhibited. Von Herkomer then took up water color portraiture, and among those who sat for him for portraits were Wagner, John Ruskin, and Tennyson. In 1881 he founded a school of painting at Bushey, which later developed into a flourishing art colony. In 1885 he became Slade professor of fine arts at Oxford, and an honorary Fellow of All Souls' College. He was already an associate of the Royal Academy, having been chosen in 1879. He became an Academician in 1890. Although best known as an artist in oils, he also painted in water colors, did engraving and wood carving, and was in addition a musician and composer, playwright, scene painter, and also showed talent as an amateur actor. He was created a Knight in 1907. Honorary degrees were given him by Oxford and Cambridge Universities, and he received many distinctions from foreign governments and societies. Some of his well-known paintings are: "Found," "The Chapel of the Charterhouse," "Portrait of the Lady in Black," "Hard Times," "On Strike," and "The Guards' Cheer."

HEROULT, Paul. A French metallurgist, died on May 13, 1914. The exact date of his birth is not known, but he was born in Normandy about 1862. When he was four years old he was taken to England by his parents; but he returned to France, where he was educated at the Ecole des Mines, Paris. His electrolytic process for the reduction of aluminum was patented in 1887, and in 1888 a factory was built to make use of his discovery. He invented an electric furnace for making high-grade steel, later adopted by the United States Steel Corporation and by British manufacturers.

HERRICK, Myron T. See United States, *Diplomatic Service.*

HERZEGOVINA. See Austria-Hungary.

HESSE. See Germany.

HEYSE, Paul Johann Ludwig von. A German poet, novelist, and dramatist, died April, 1914. He was born in Berlin in 1830, his mother being a Jewess. His father was a professor of philology. He studied classics in Berlin, and Romance languages at Bonn. The most important intellectual influence in his early days, however, was that which came from the literary circle at the house of Franz Kugler and his wife. He spent 1852–53 in Italy. Made famous by his short story *L'Arrabbiata*, he was invited in 1854 by King Max of Bavaria to reside in Munich with a pension of £100, and no duties save that of attending the symposia at which the King gathered around him for the friendly discussion of arts, literature, history, etc., many of the finest minds in Europe. Heyse soon became the leader of the literary world in Munich. Heyse held his pension until 1864, when on account of the withdrawal of the pension granted his friend Geibel, because of an ode to King Wilhelm of Prussia, the former laid down his own pension and retired from the court. He continued, however, to make his home in Munich, although in his later years most of his winters were spent in his villa on Lake Garda. In 1910 he was awarded the Nobel Prize for Literature. His writings include prose fiction, poetry, and dramas, but his reputation rests upon his short stories.

HIBERNATION. See Pituitary Gland.

HIDES. See Leather.

HIGH COST OF LIVING. See Food and Nutrition.

HIGH FREQUENCY SPECTRA. See Physics.

HIGH PRESSURE FIRE SYSTEM. See Fire Protection.

HIGH SCHOOLS. See Education in the United States.

HILL, George William. An American agriculturist and editor, died March 30, 1914. He was born in St. Peter's Port, Guernsey, England, in 1845, and was educated in France at the French Lycée, and at private schools. Removing to Canada, he studied law at McGill University. After completing his course he was employed in the Bank of Montreal, and later served on the staff of the *Montreal Herald*. From 1870 to 1879 he was in the service of a life insurance company in Chicago. In 1879 he established the *Farmers' Review* in that city. In 1886 he removed to St. Paul, Minn., where he managed and edited *The Farmer* until 1888. From 1899 to 1911 he was editor-in-chief for the United States Department of Agriculture, and from 1897 to 1911 was editor of the *Year Book* of that department.

HILL, George William. An American astronomer, died April 16, 1914. He was born in New York City in 1838, and graduated from Rutgers College in 1859. In 1861 he became assistant in the office of *The American Ephemeris and Nautical Almanac*. Researches made by him in connection with the lunar theory secured for him a gold medal of the Royal Astronomical Society of London in 1887. In 1888 he was awarded the Damoiscan prize of the Paris Academy of Sciences. From 1898 to 1901 he was a lecturer in celestial mechanics at Columbia University. He was a member of many astronomical and scientific societies. His published writings include: *The Theory of Jupiter and Saturn* (1890); *Collected Mathematical Works* (1905); and papers on mathematical astronomy, etc.

HINDENBURG, Paul von Beneckendorf und von. See War of the Nations.

HISCOCK, Frank. Former United States Senator from New York, died June 18, 1914. He was born in Pompey, N. Y., in 1834, and was educated at Pompey Hill Academy. He studied law, and in 1855 was admitted to the bar.

Shortly afterward he and his brother removed to Syracuse, N. Y., where he soon achieved a local reputation as an able lawyer. He also took part in politics and was a prominent member of the "free soil" element in the Democratic party. In the ensuing presidential campaign he acted with the Republican party, thus becoming identified with its formation. In 1860 he was elected district attorney of Onondaga Co., and in 1867 he was a member of the State Constitutional Convention. He supported the nomination of Horace Greeley for the Presidency in 1872, and was a candidate for Congress on the ticket nominated by the Liberal Republicans and Democrats. Following his defeat he resumed his place in the Republican party, and in 1876 was a delegate to the Republican National Convention. In 1877 he was elected to Congress, serving until 1887. In the Forty-sixth Congress, as chairman of the Ways and Means Committee, he was practically the leader of the House. In 1887 he was elected to the United States Senate and served until 1893. After leaving the Senate he returned to his private practice in Syracuse, where he continued to be an important factor in politics.

HISTORICAL ASSOCIATION, American. The thirtieth annual meeting of the association was held in Chicago on Dec. 29, 30, and 31, 1914. The following papers were among those read at this meeting: "Fresh Light upon the History of the Earliest Assyrian Period," Robert W. Rogers; "Hadrian and His Reign," W. D. Gray; "One Hundred Years Ago," Max Farrand; "An Approach to a Study of Napoleon's Generalship," R. M. Johnston; "The House of Commons and Disputed Elections," Henry R. Shipman; "The Influence of the Rise of the Ottoman Turks upon the Routes of Oriental Trade," Arthur H. Lybyer; "The Earlier Relations of England and Belgium," Charles W. Colby; "Roger Bacon," Earle W. Dow; "Principles of Classification for Archives," Waldo G. Leland. The membership in December, 1914, was 2900. The officers of the association are: President, H. Morse Stephens, University of California; first vice-president, George L. Burr, Cornell University; second vice-president, Worthington C. Ford, Boston, Mass.; secretary, Waldo G. Leland, Carnegie Institution of Washington, D. C.; treasurer, Clarence W. Bowen, New York; curator, A. Howard Clark, Smithsonian Institution, Washington, D. C.

HISTORICAL RESEARCH. See Carnegie Institution.

HOCKEY. The championship of the American Amateur Hockey League was won by the St. Nicholas Skating Club of New York with 7 victories and 1 defeat. The Hockey Club of New York was second, winning 5 games and losing 3. The standing of the other teams was: Irish-American A. C., won 4, lost 4; Crescent A. C., won 4, lost 4; Wanderers, won 0, lost 8.

The intercollegiate title went to Princeton largely as the result of the brilliant playing of Hobey Baker. Toronto University captured the Fellowes Trophy, emblematic of the college championship of Canada.

The professional matches held in New York City resulted in a victory for the Wanderers of Montreal, who defeated Quebec in the deciding series by a total score of 15 to 12.

HODGKINSONITE. See Mineralogy.

HOG CHOLERA. See Veterinary Medicine.

HOGS. See Stock Raising.

HOHENZOLLERN CANAL. See Canals.

HOLDEN, Edward Singleton. An American astronomer and educator, died March 16, 1914. He was born in St. Louis in 1846, and graduated from Washington University with the degree of B.S., in 1866. He then entered the United States Military Academy, from which he graduated in 1873. He served as lieutenant of engineers in the United States Army from 1870 to 1873. He then resigned to become professor of mathematics and astronomy at the Naval Observatory in Washington. From 1881 to 1885 he was a director of the Washburn Observatory and professor of astronomy in the University of Wisconsin. In the latter year he was chosen president of the University of California, serving in that post until 1883, when he was appointed director of the Lick Observatory, where he remained until 1898. In 1902 he became librarian at the United States Military Academy, and held this post until his death. He was the author of many books dealing with astronomical and other subjects. These include: *The Bastian System of Fortification* (1872); *Index Catalogue of Nebulæ* (1877); *Life of Sir William Herschel* (1881); *Writings of Sir William Herschel* (1881); *Astronomy* (with Simon Newcomb, 1887); *Hand-book of the Lick Observatory* (1882); *Mogul Emperors of Hindustan* (1895); *Mountain Observatories* (1896); *Pacific Coast Earthquakes* (1898); *Earth and Sky* (1898); *Elementary Astronomy* (1899); *Family of the Sun* (1899); *Essays in Astronomy* (1900); *Stories of Great Astronomers; Real Things in Nature* (1903); *The Sciences* (1903). He also edited publications of the Washington Observatory from 1881 to 1885; the publications of the Lick Observatory, 1888 to 1894; and the *Centennial of the United States Military Academy* (1902). He was a member of many learned scientific societies. He received the degree of LL.D. from the University of Wisconsin and from Columbia University.

HOLLAND. See Netherlands.

HOLLAND, John Philip. An American inventor, died Aug. 12, 1914. He was born in Liscannor, Ireland, in 1844, and was educated at the Christian Brothers' School, Limerick. He taught school for 15 years, including five years at Paterson, N. J. He had come to the United States before the Civil War, and the battle between the *Monitor* and the *Merrimac* set him thinking on the subject of a submarine boat. In 1875, after nearly 15 years of study and experiment, he submitted his plans to the United States Navy Department. These plans were handed to naval engineers and were reported as practical in every way save one. This exception was the judgment that men could not be found to risk their lives in such a perilous experiment. The scheme was therefore rejected by the Navy Department, and Mr. Holland returned to his shop, where he spent 18 years more in studying and perfecting his ideas. In 1893 he again returned to the Navy Department with his improved plans. This time he was more successful, and an appropriation for $200,000 was authorized. With this the first Holland submarine boat was constructed. This boat, a very small one, was sent under the water with a cat and a rooster aboard. The experiment was entirely successful, and following this an appropriation was granted to build a man-carrying submarine. On account of criticism and the interference by navy engineers, Mr. Holland withdrew his plans and set about to raise money to construct a submarine himself. This he did, and in 1898 the *Holland* was launched and proved so successful that the Government bought it directly after the war with Spain. After this success he turned his attention to aërial navigation and spent several years in building aëroplanes that did not fly. In his old age he met with financial reverses and suffered much hardship.

HOME, Sir Anthony Dickson. An English physician and surgeon, died Aug. 8, 1914. He was born on Nov. 30, 1826, and after completing his medical education entered the army medical department in 1848. He served in the Eastern campaign, 1854–55; in the Indian Mutiny (1857); in China (1860); in New Zealand (1863–65); in the Ashantee War (1873–74). He was principal medical officer in Ashantee (1873); in Cyprus (1878–79); and to the British forces in India (1881–85). He was made surgeon-general in 1880, and retired in 1886. He published *Service Memories* (1912).

HOME RULE. See Great Britain.

HONDURAS. A Central American republic. Capital, Tegucigalpa.

Area, Population, etc. The area of the republic is estimated at 114,670 square kilometers (44,274 square miles). Estimated population at the end of 1911, 566,017. Most of the inhabitants are Indians, of whom perhaps 90,000 are uncivilized. The largest town is Tegucigalpa, with 22,137 inhabitants in 1910; Santa Rosa, 10,574; Juticalpa, 10,529; Danté, 8477; Nacaome, 8152; Choluteca, 8065; San Pedro Sula, 7820. Reported marriages in 1911, 2114; births, 21,825; deaths, 10,620. Reported primary schools in 1912, 890, with 35,703 pupils, and 25,917 in average attendance. For secondary education the government maintains an institute at Tegucigalpa and subsidizes colleges in the departments. A university is also maintained at Tegucigalpa, and at Comayagua a law school.

Production, Commerce, etc. The crop commercially most important is bananas, cultivated chiefly in the Caribbean coast region. Here also are grown large quantities of coconuts. Corn is a very important crop throughout the country; other products include sugar cane, tobacco, and coffee. Cabinet woods, especially mahogany, and rubber are exploited. Grazing is important. Reported number of live stock in 1912: cattle, 420,275; horses, 87,732; mules, 14,542; sheep, 24,935; swine, 108,048. Honduras is exceptionally rich in minerals, but they are not extensively worked except at the famous Rosario gold (and silver) mine, situated not far from Tegucigalpa.

Imports and exports in the fiscal year 1912 amounted, respectively, to 10,793,286 and 7,700,446 pesos silver, as compared with 9,258,441 and 7,561,816 pesos in 1911. The largest imports are cotton manufactures and foodstuffs. Leading exports in the fiscal year 1912: Bananas, 3,473,766 pesos; gold and silver cyanides, 2,049,528; coconuts, 485,536; cattle, 415,199; hides and skins, 325,181; coined silver, 323,595; coffee, 205,522; rubber, 159,473. Of the imports in the fiscal year 1912, the United States furnished the value of 7,230,000 pesos, and of the exports received the value of 6,805,000 pesos; United Kingdom, 1,366,000 and 178,000; Germany, 1,215,000 and 322; France, 1,215,000 and 5000; Central America, 174,000 and 331; other countries, 330,000 and 59,000.

Communications. Inadequate means of communication and transportation account in considerable degree for the country's meagre development. A 10-mile railway from Trujillo to Juticalpa, built in 1913, was under extension during the year. The Guyamel Fruit Company began work on an extension of this line from Vera Cruz to Omao, 9 miles in length, and a wharf 800 feet in length at Omao was under construction. Reported for 1913 are 186 kilometers (116 miles) of railway, and 55 kilometers (34 miles) of plantation railway. In 1912 there were 245 telegraph offices, with 5182 kilometers (3220 miles) of wire. Post offices (1912), 278.

Finance. The monetary unit is the silver peso (25 grammes, .900 fine), whose value fluctuates with the price of silver. At the beginning of 1913, it was worth about 45.1 cents, and at the beginning of 1914 about 43.4 cents. Revenue for the fiscal year 1912 was 4,627,905 pesos; for 1913, 5,207,232 pesos. For the latter year, the revenue had been estimated at 4,714,065 pesos, and the expenditure at 4,824,000 pesos. Estimates of the larger departmental disbursements were: war, 1,795,887; interior, 701,224; public works and agriculture, 671,978; public instruction, 510,501; finance, 401,374 (exclusive of 342,820 for the public debt).

There are four foreign loans, contracted in 1867–70, aggregating £5,398,570; these, with arrears of interest accumulating from 1872, amounted to £24,323,969 at the end of 1913. Reported internal debt, Aug. 31, 1912, 6,625,206 pesos.

Government. The legislative power is exercised by a unicameral congress of 42 members, and the executive authority is vested in a president. The members of Congress and the President, as well as the Vice-President, are elected for four years by direct vote. In November, 1911, Gen. Manuel Bonilla was elected President, and Francisco Bertrand Vice-President. They were inaugurated for the four-year term on Feb. 1, 1912. On March 13, 1912, Bonilla died and was succeeded by Bertrand for the remainder of the term.

History. On March 10 a terrible conflagration destroyed 23 city blocks in the town of Ceira and caused damages which were estimated at no less than $3,000,000. In April a proposal was pending whereby the United Fruit Company—an American syndicate headed by Minor C. Keith—would undertake to pay the government $400,000 down and $1,000,000 in 40 annual installments, in return for control of the railways for 99 years. For information regarding the arbitration treaty with the United States, see the article on the United States. See also the article on International Arbitration and Peace, *Bryan-Wilson Treaties*.

HONGKONG. An island (about 32 square miles) off the southeast coast of China, at the mouth of the Canton River, which, with a strip of territory on the mainland leased from China (376 square miles) and about 4 square miles of the Kowloon Peninsula, besides some islets, constitutes a British crown colony. The harbor, one of the most magnificent in the world, has an area of 10 square miles; it is surrounded by a line of granite hills, between 2000 and 3000 feet high. The total civil population (1911) numbers 456,739, of whom 444,664 are Chinese, 5538 Europeans, 6537 various races. There is a continual flow of Chinese immigration and emigration; the number of immigrants in 1912 was 163,248, and of emigrants 122,657, principally to and from the Straits. These figures are exclusive of those to and from Chinese ports. The island has many manufactories for the production of rope, sugar, rum, beer, paper, vermilion, sauce, bricks, tiles, cement, bamboo work, and shipping stores. The boat-building trade is largely in the hands of the Chinese. Victoria is the capital, overlooking the harbor.

Hongkong being a free port, accurate trade returns are not available; but a glance at the shipping table below will give an idea of the enormous extent of the trade (A—ocean-going, B—river steamers, C—steamships under 60 tons in the foreign trade, D—steam launches engaged in local trade):

	Number		*Tonnage*	
	1911	*1912*	*1911*	*1912*
British A	3,907	3,956	7,589,995	7,779,970
Foreign A ...	4,180	4,367	7,917,640	8,592,820
British B ...	6,871	6,968	4,116,786	4,197,744
Foreign B ...	1,423	1,738	736,057	894,849
C	3,263	3,981	130,092	150,612
Junks	25,334	25,598	2,572,538	2,654,275
Total	44,978	46,608	23,063,108	24,269,270
Local D	461,984	411,990	10,981,990	10,609,404
Local Junks .	36,608	30,056	2,134,054	1,856,475
Total	543,570	488,649	36,179,152	36,735,149

Cables connect Hongkong with all parts of the world. In 1910 a railway was completed from Kowloon to the Chinese frontier, where it connects with the one from Canton. The revenue in 1912 (about one-seventh derived from the opium monopoly, the remainder from licenses, land sales, stamps, duties, and fees), amounted to 8,180,694 dollars Mexican, and the expenditure to 7,202,503, against 7,497,231, and 7,077,177 dollars Mexican respectively in 1911. The public debt totals £1,485,732. Sir F. H. May (appointed 1912), was Governor in 1914. The headquarters of the new territory is at Taipo, where a district officer resides, with police and magisterial functions. An assistant district officer presides over the Southern district.

HOOKWORM DISEASE. Reports from various States in the Southern United States indicated that the campaign against hookworm disease was proceeding with unabated vigor. The Kentucky State Board of Health reported that up to January 1 last year the physicians of the State had reported 45,470 cases. Tennessee State hookworm examiners found that James County was heavily infected, 75 per cent of the children examined having the disease in various degrees of severity. In North Carolina the work was being carried on under the hookworm bureau of the State Board of Health and satisfactory reports were received from all communities in which work was being directed. In Texas school children were being examined county by county to determine the degree of infection. Here the disease appeared to vary greatly in its occurrence. The commission made 200 examinations in Bell County and found only one case, whereas in Nacogdoches County, of 564 children of school age examined, 332, or nearly 59 per cent, harbored the hookworm. The general percentage of infection was about 34; among the Mexican population it was over 90. Investigations as to the cause of anæmia, which is a constant symptom of the disease, have been made by many laboratory workers. The subject could not be considered by any means settled. It was first assumed that the worms in biting and attaching themselves to the wall of the intestine lead to a great loss of blood; but postmortem examinations of the small intestine showed a wide variety of lesions. Sometimes a diffuse catarrh only is observed, or there may be large spots of hemorrhagic infiltration, each with a worm attached to its centre. Hemorrhages may or may not be present. It does not follow, therefore, that the worms suck blood, for although blood is not infrequently found in the intestine of the worms, red corpuscles are not digested to any extent. Looss believed their natural food was the epithelium of the intestine. Other observers adopted the toxin theory. The toxin may either be secreted by the worm itself or its presence may favor the multiplication of other extraneous intestinal bacteria which penetrate through the damaged mucous membrane. The greatest objection against the latter theory is the rapidity with which the anemia disappears on the elimination of the worm. It is probable that several factors enter into the situation.

HOOPER, Franklin William. An American institute director, died Aug. 1, 1914. He was born in Walpole, N. H., in 1851, and was educated at Antioch College and at Harvard University, from which he graduated in 1875. He then took post-graduate studies in biology at Harvard, and received an honorary M.A. degree in 1897. He served on the scientific expedition to the Florida Keys for the Smithsonian Institution in 1875–76, and on his return became principal of the Keene High School in New Hampshire. In 1880 he was appointed professor of chemistry and biology at the Adelphi Academy in Brooklyn. He became one of the first trustees of the Brooklyn Institute in 1887, and two years later was made its director. This position he held until the time of his death. He was a fellow of the American Association for the Advancement of Science, and vice-president of the American Bison Association. He was lecturer on geology and biology at the Brooklyn Institute, and was a director of the Brooklyn Public Library. He was editor of the year books and bulletins of the Brooklyn Institute.

HOPE-JONES, Robert. An Anglo-American organ builder, died in September, 1914. He was born in England in 1841, and became chief electrician of the English Telephone companies and a member of the British Institute of Electrical Engineers. It was through his application of electricity in organ building that he gained a wide reputation. His instruments were widely installed in English-speaking countries, and in Germany and France, those at Worcester Cathedral, England, and at the Ocean Grove (N. J.) Auditorium being especially celebrated. He became a member of the Royal College of Organists. Coming to the United States in 1903, he built organ factories at Elmira,

N. Y., and later at North Tonawanda, N. Y. The Rudolph Wurlitzer Company purchased the latter factory in 1914. Hope-Jones had latterly made his home in Buffalo. He committed suicide.

HOPS. The world's hop production in 1914 based on European estimates amounted to 1,955,000 hundredweights, as compared with 1,365,000 hundredweights in 1913. In several European countries, and notably in England and Germany, the yields surpassed those of previous years and the quality of the crops was also good. The production in hundredweights was reported for the different countries as follows: Australia 15,000, Austria-Hungary 377,000, Belgium 70,000, England 507,000, France 43,000, Germany 400,000, and Russia 100,000. In 1913 England produced only 275,000, and Germany only 320,000 hundredweights. The United States produced in 1914 approximately 300,000 bales of about 180 pounds each. Of this quantity Oregon produced 125,000, California 105,000, Washington 50,000, and New York 20,000 bales. As compared with the year before, these figures indicate larger total yields in California and Washington and a smaller yield in New York, while the production in Oregon was the same for the two years. The average acre yield in New York was estimated at about 700 pounds. The consumption of hops in the United States from the crop of 1913 was about 245,000 bales, and on this basis the crop of 1914 represents a surplus of over 50,000 bales or one-sixth of the total production. Data compiled from the records of the Treasury Department show that for the year ending June 30, 1914, the brewers consumed 43,987,623 pounds of the domestic crop, and 24,262,896 pounds were exported. Owing to the short crop in Europe in 1913 the domestic exports were heavier than they had been for a series of years. A test of a hop-picking machine on the Pacific coast was reported as having resulted most favorably, the machine picking 105 bales clear and clean in 24 hours. A hop growers' mutual protective association was organized in California in October of this year.

HORNBLOWER, William Butler. An American jurist, died June 16, 1914. He was born in Paterson, N. J., in 1851, and was educated in the Collegiate School in New York City, and at Princeton University, from which he graduated in 1871. He then studied law at Columbia Law School, receiving the degree of LL.B. in 1875. He at once began the practice of law in New York City, and soon became senior member of the law firm of Hornblower, Byrne, and Taylor. His ability as a lawyer soon won him a foremost position in the bar of New York City. He took no official part in public affairs until 1890, when he was appointed by Governor Hill a member of the commission created by the Legislature to propose amendments to the judiciary article of the State Constitution. Three years later, however, it was Governor Hill, then United States Senator, who was largely responsible for the failure of the Senate to confirm the nomination of Judge Hornblower to the United States Supreme Court. President Cleveland in the year mentioned appointed Judge Hornblower to the justiceship during a recess of Congress. Previous to that time in the same year Mr. Hornblower had led a Democratic revolt against Judge Maynard, an intimate friend and supporter of Senator Hill. Judge Maynard was candidate for the judgeship of the Court of Appeals of New York, and through Judge Hornblower's efforts he was defeated. On the appointment of Mr. Hornblower to the Supreme Court, Senators Hill and Murphy of New York fought the appointment bitterly. So successful was their opposition that the Senate voted against the appointment. In February, 1914, Governor Glynn of New York appointed Mr. Hornblower as associate judge of the Court of Appeals. The nomination was unanimously confirmed by the Senate. Judge Hornblower was prominent in the American Bar Association, and was elected president of the State Bar Association in 1904, and president of the Association of the Bar of the City of New York in 1913.

HORNE, Charles Silvester. English Congregational clergyman and member of Parliament, died May 3, 1914. He was born at Cuckfield, Sussex, in 1865, and was educated at Glasgow University. He subsequently studied theology at Mansfield College, Oxford. From 1889 to 1903 he was minister of Kensington Chapel. In the latter year he volunteered to serve as minister to the reorganized Whitefield's Church, in Tottenham-court-road, London, which was at the time an ordinary church in the poor district of the city, but under Dr. Horne's ministrations it became London's first great central mission. He established a number of social agencies to work in connection with the church. Mr. Horne became widely known as a preacher, was also active in politics, and in 1910 was elected Liberal Member for Ipswich. He died in Toronto while on a visit to Canada. His published writings include: *A Modern Heretic* (a novel); *Popular History of the Free Churches; Life of David Livingstone;* and various volumes of sermons.

HORSES. See Stock Raising; Veterinary Science.

HORTICULTURE. The world's fruit and vegetable production was considerably above normal in 1914, with a consequent lowering of prices except in and about the war zone. With a restricted distribution area emphasized by unfavorable internal trade conditions, the big commercial crops of the United States were marketed with some difficulty. This was notably true of fresh fruits. Canned and dried products were receiving only a temporary setback, awaiting the improvement of shipping facilities to European countries. In the British Isles the lack of sugar seriously interfered with the jam making industry.

The commercial apple crop in the United States was fully 50,000,000 barrels. Canada also had a large crop, and in both countries only the best fruit was worth marketing. California shipped a banner citrus crop of 48,548 cars, as compared with 18,085 cars in 1913. California's fresh deciduous fruit shipments amounted to 16,146 cars, or 2800 cars more than in 1913, with receipts about $3,000,000 less than in 1913. Florida's total shipments of fruits and vegetables amounted to 44,478 cars, of which 21,500 cars were oranges and grapefruit. The first cargo of fresh fruits and vegetables for New York via the Panama Canal left San Francisco on the American-Hawaiian liner *Ohio* on December 23. The cargo, which was shipped under refrigeration, was composed of oranges, lemons, apples, celery, and Casaba melons. The total canned vegetable pack of the United States for 1913 was 14,206,000 cases of tomatoes, 7,283,000 cases of corn, and 8,770,000 cases of peas. The onion crop for 1914 was estimated at 6,900,000 bushels, as compared with 4,690,000 bushels in 1913. The Irish potato crop approximated 384,000,000 bushels, as compared with 331,525,000 bushels in 1913. During the year ending Sept. 1, 1914, the Norfolk, Va., trucking sections shipped over 4,000,000 packages of fruits and vegetables. Porto Rico shipped $1,504,000 worth of oranges and grapefruit and $1,246,000 worth of fresh pineapples. Increased shipments of Porto Rico coffee are being made both to the United States and Europe.

EXPORT AND IMPORT TRADE. Imports of fruits, vegetables, and nuts to the United States increased from $53,981,414 worth to $68,554,793 worth during the fiscal year ending June 30, 1914. There was a decrease in exports from $44,432,639 in 1913 to $38,786,908 in 1914. The considerable increase in imports and decrease in exports was due to the short home supply in 1913. Of the exports, fruits amounted to $31,030,713; vegetables, $6,936,400; and nuts, $819,795. The import figures were: Fruits, $33,638,334; vegetables, $15,133,535; and nuts, $19,782,924. Of the total imports, bananas alone amounted to $16,397,884. Ornamental trees and plants to the value of $3,597,008 were imported in 1914. There were notable increases in exports of oranges and fresh pears. During the latter part of the year, the export trade was seriously interfered with by the great war in Europe. By the close of the year, however, there was an active demand for fresh apples, as well as canned and dried fruits and vegetables. Owing to the general congestion of shipping, fruit exporters were having difficulty in securing steamer space.

The Hawaiian canned pineapple industry, which has steadily increased from a pack of 1893 cases in 1903 to over 2,000,000 cases in 1914, is now confronted with serious marketing problems. A large percentage of the 1914 pack was undisposed of at the close of the year. Porto Rico and New Zealand have both made a start in the canned pineapple industry. All of the Australian fruit industries have shown rapid development. Over 1,000,000 boxes of apples were shipped in 1914, principally to the British Isles.

Great Britain imported in 1913 raw fruits and edible nuts to the value of about £11,500,000 sterling and raw vegetables amounting to £5,500,000. Much of this trade is with continental Europe and was seriously affected by the war. Belgium markets were practically destroyed. The German export business was cut off. In Holland all vegetables capable of being stored rose sharply in price. Millions of Dutch flowering bulbs were rotting for lack of buyers. Tulip bulbs were being utilized to some extent with flour in making bread. The normally large Servian prune crop was practically eliminated from the market. Vintage in France was continued, and partial success was being attained in filling foreign orders for nursery stock. Spain was having difficulty in marketing her orange crop through disturbance of transportation facilities. The value of fruit production in Spain last year approximated $48,650,000. Oranges alone were worth $12,848,593. Insects known as red lice caused considerable damage to the orange industry.

QUARANTINE MEASURES. In view of the serious outbreak of citrus canker in Florida, the Secretary of Agriculture issued an order effective Jan. 1, 1915, prohibiting the importation from all foreign countries of citrus nursery stock, including buds, scions, and seeds, except for experimental purposes by the U. S. Department of Agriculture. The embargo was removed on November 30 from Canadian potatoes, provided that they come from disease-free districts and are entered through the ports of New York and Boston, where the Federal Horticultural Board maintains inspectors.

APPLE TABLE SIRUP. Following extensive experiments begun last spring the U. S. Department of Agriculture has applied for a public-service patent covering the making of a new form of table sirup from apples. The new sirup, one gallon of which is made from seven gallons of ordinary cider, is a clear ruby or amber color of the same consistency as cane sirup and maple sirup. It will keep indefinitely when properly sterilized and put in sealed tins or bottles. An extensive commercial experiment in manufacturing apple sirup was under way at a large cider mill in Oregon late in the year. An important feature of the process consists in freezing ordinary cider and separating the concentrated juice from the crushed ice in a centrifugal machine. The same principle has been applied in work with other fruit juices. By a recent decision of the department, all fruit juices to which alcohol has been added must be plainly labeled to show this when intended for interstate shipment.

FLOWERING PLANTS IN THE ALPS. Investigations by Herr von Klebelsberg in the Tyrolese Alps have revealed the existence in that region of no less than 86 species of flowering plants above the snow limit. Of these 56 were found some 300 feet above the snow line, while six occurred over 1500 feet above. The highest species of all, the glacial Ranunculus, was met at over 12,000 feet above sea level on the Gross Glockner.

FORCING PLANTS WITH CARBONIC ACID GAS. A number of German investigators, among them H. Fischer, E. Reinau, and R. Klein, have secured remarkably increased growth among greenhouse plants by charging the confined air with an excess of carbonic acid gas. In Fischer's work the yield of tomatoes was practically doubled and the yield of cucumbers increased 12½ per cent by the carbonic acid treatment. Treated fuchsia plants came into bloom quicker and the bloom was prolonged for several weeks. Reinau and Klein used a commercial-sized greenhouse and treated one compartment containing 40 cubic meters of space with 150 liters of pure carbon dioxide twice a day at 7 A. M. and at 12 M. A similar compartment was used as a check. Observations taken at the end of a four- and a seven-week period showed an increased growth ranging from 24 to 152 per cent. The authors' experiments as a whole indicate that the carbon dioxide content of air and of organic manures should receive more attention as an important plant food.

SULPHUR AS A PLANT FOOD. Experiments conducted by W. Janicaud with tomato plants, and by J. Chauzit with grapevines, indicate that sulphur has an important fertilizer action when used in combination with complete organic and inorganic fertilizers. Sulphur used alone was of relatively little value and had a somewhat deleterious effect on the tomato plants.

CHANGE OF SEX IN THE PAPAYA. As a result of long-continued investigations in Hawaii, J. E. Higgins and V. S. Holt have found that it is possible by using a hermaphrodite parent to do away with the very large proportion of male trees, which usually result from diœcious seed. Observations have also been made of the appearance of hermaphrodite flowers on trees that have previously produced only staminate flowers. In one authenticated instance reported by J. T. Gulick, female flowers with resulting fruit developed on a male tree which had been beheaded. Higgins and Holt cut the tops off of a number of male trees and succeeded in getting female flowers in two cases. No record has been found which would indicate that the strictly female or pistillate tree has ever changed its sex. Certain trees have been found to be capable of parthenocarpic development of fruit, but no cases of parthenogenesis have been recorded.

NEW FRUITS, NUTS, AND PLANTS. The U. S. Department of Agriculture's most recent list of new or little-known fruits and nuts considered worthy of more extensive trial include the Banana, McCroskey, and Opalescent apples; Lizzie peach; Flower and James grapes; Triumph persimmon; Lue orange; and the Boone chestnut. During the year a "citrandarin," obtained by crossing the Oneco tangerine and the trifoliate orange, ripened for the first time and yielded a fruit so sweet and of such good quality that it appears to be promising as a table fruit. Judging from its actual behavior during the past three winters, the citrandarin is likely to prove nearly as hardy as the citrange and other trifoliate hybrids.

For a number of years the Department of Agriculture has experimented with udo (*Aralia cordata*), a Japanese vegetable that has been grown in this country as an ornamental for about 20 years. It has been found that udo may be grown and used very much like asparagus. The shoots must be blanched because the green shoots are rank in flavor, whereas the blanched shoots are said to be delicious. The plant requires very little care and yields about as well as asparagus. Analyses show it to have about the same dietetic value as asparagus or celery. David Fairchild describes the culture and uses of udo in *U. S. Department of Agriculture Bulletin* 84, entitled "Experiments with Udo, the New Japanese Vegetable."

As a result of a cultural test of the "Poire de terre Cochet," or Yacon (*Polymnia edulis*), of the Andes region of South America, R. de Noter concluded that although this plant was rejected some 50 years ago as a substitute for the Irish potato, it may prove of more value than the Jerusalem artichoke for French conditions. The tubers are prolific, of an agreeable flavor, and are as readily lifted from the soil as a clump of dahlia tubers, which they closely resemble. Moreover, the foliage appears to have value as a fodder crop.

In consequence of the bud selection work with citrus fruits conducted by the U. S. Department of Agriculture in California (see HORTICULTURE, 1912), it is rapidly becoming a matter of orchard practice in that State to work over unprofitable individual trees with buds from those that consistently produce the desired type of fruit in abundance. Extensive studies of supposed walnut-oak hybrids occurring in California have led E. B. Babcock to conclude that they are merely mutations of the common California walnut, *Juglans californica*.

NEW METHODS OF PROPAGATING NUT TREES. R. T. Morris has found that when grafting the shagbark hickory with scion wood more than one year old, if a small side branch from old wood carries a large terminal bud, this bud will start promptly, providing care is taken to remove vigorous stock sprouts. Scions four, five, and even six years of age have been used with success. An inarch method was recently experimentally employed with success in grafting hickories. In this method the scion is cut free from the parent plant and the part below the inarch is inserted in a test tube or a small bottle containing water. It was found that the water can be kept in good condition by inserting specimens of bladderwort (*Utricularia*). The successful development of this method will be of special value in extending the grafting season.

INSTITUTIONS, SOCIETIES, ETC. By a bill passed on August 12, the National Botanic Garden at Washington is to be transferred from its present restricted site opposite the Capitol to a 400-acre tract in the unimproved northern end of Rock Creek Park, where conditions are favorable for the development of an important economic as well as ornamental garden. A new horticultural building was dedicated at the Pennsylvania Agricultural College and Maurice G. Kains, associate editor of *The American Agriculturist*, was appointed professor of horticulture and horticulturist of the station. L. C. Corbett has resumed charge of the horticultural and pomological investigations of the U. S. Department of Agriculture in place of A. V. Stubenrauch, who is now in charge of the new division of pomology at the University of California. A plant industry building is under construction at the Iowa Agricultural College. The new landscape art building at Cornell University was occupied during the year.

A new experiment station for pomology, known as the Salghir Station, was established in the Crimea, in the town of Simferopol. In connection with the development of a system of agricultural experiment stations in Algeria, branch fruit stations are to be located at Orleansville, Guelma, Tlemcen, and Kabylie. The Province of Salta in Argentina has given the subtropical agricultural experiment station at Güemes nearly 500 acres of land for experimental work in the cultivation of citrus fruits.

The first horticultural school for women in France, a higher school of horticulture for young women, was opened in the latter part of 1913 at Brie-Comte-Robert, near Paris, under the auspices of the Union for the Agricultural and Horticultural Instruction of Women.

The Royal Horticultural Society of England was compelled to abandon its annual fruit show on account of the war. *Zeitschrift für Pflanzenzüchtung*, a joint organ of the German and Austrian Societies for the Promotion of Plant Breeding, is being published in Berlin.

Bibliography. Among the recent contributions to horticultural literature are the following: H. I. Triggs, *Garden Craft in Europe* (New York, 1913); L. H. Bailey, *New Standard Cyclopedia of Horticulture* (vols. i, ii, ib., 1914); E. B. Copeland, *The Coconut* (London, 1914); P. W. Humphreys, *The Practical Book of Garden Architecture* (Philadelphia, 1914); G. W. Kerr, *Sweet Peas Up-to-date* (rev. ed., Philadelphia, 1914); Lowther, Worthington, et al., *Encyclopedia of Practical Horticulture* (three vols., North Yakima, Wash., 1914); H. F. MacMillan, *Handbook of Tropical Gardening and Planting with Special Reference to Ceylon* (2nd ed., Colombo, 1914); F. C. Sears, *Productive Orcharding* (Philadelphia, 1914); H. H. Thomas et al., *Rose Book* (New York, 1914); C. J. J. Van Hall, *Cocoa* (London, 1914); Whitson and Williams, *Luther Burbank, His Methods and Discoveries and Their Practical Application* (three vols., New York, 1914).

HOSPITAL BUILDINGS. See ARCHITECTURE.

HOSPITALS. Among the great number of donations to hospitals during the year of 1914 a few of the larger amounts may be mentioned here. The National Jewish Hospital for Consumptives received $350,000 from Dr. Samuel Grabfelder, of Philadelphia, its president; The Presbyterian Hospital, New York City, about $125,000 by the will of Mrs. Nellie M. Noe; Wesley Hospital of Chicago, $1,000,000 from James Deering; New York State Women's Hospital, $150,000; Presbyterian Hospital, $100,000; Manhattan Eye and Ear Institute, $50,000; New York Institute for Deaf and Dumb, $50,000; Memorial Hospital for Cancer and St. Luke's, each $10,000, and Denver Home for Consumptives, $50,000, by the will of Maria De-Witt Jesup. Mr. John D. Rockefeller gave $2,550,000 to the Rockefeller Institute for Medical Research for additions to the present plant, in addition to a fund of $1,000,000 for the establishment of a department of animal pathology, which will give special attention to the investigation of hog cholera, foot-and-mouth disease, diseases of poultry, etc. Bequests to the Hospital for Deformities and Joint Disease, of New York City, $25,000, and to the Presbyterian, Mount Vernon, and Episcopal Hospital each $20,000, were made in the will of Mrs. A. Gertrude Cutter. Medford Sanitarium of Long Island, N. Y., received an endowment of $100,000, donated from an anonymous source. Homestead Sanatorium, Providence, N. Y., the tuberculosis hospital for Saratoga County, opened in 1914, with capacity of 12 patients, costing $50,000, exclusive of gift of 400 acres of land, and a roadway of 4½ miles by Gen. H. W. Carpentier. It stands at an altitude of 1467 feet on a spur of the Kayaderosseras Mountains. The Mercy Hospital of Chicago received $250,000 by the will of Charles Heines. William Hood Dunwoody of Minneapolis, Minn., donated $1,000,000 for the upkeep of Dunwoody Home for convalescents, at Newton, Pa. The new Herman Knapp Memorial Eye Hospital was opened December 12, in New York City. The institution carries on the work of the old New York Ophthalmic and Aural Institute, which was founded by Dr. Knapp in 1869. The new hospital in connection with the work of the Hebrew Infant Asylum in the Bronx, New York City, was dedicated February 8. The building cost $25,000, and provides a separate room for each patient. The Psychopathic Pavilion at the Los Angeles County Hospital was opened August 3. The ward has accommodation for 100 patients, and was erected at a cost of $175,000. The Robert W. Long Hospital, Indianapolis, costing $250,000, exclusive of the site, was dedicated in May. It was the gift of Mr. and Mrs. Robert W. Long. The new St. Francis Hospital, Beech Grove, Ind., was dedicated June 21. The institution cost $200,000 to build and will accommodate 200 patients; The Scott County, Iowa, Tuberculosis Hospital, costing $75,000, was opened July 4. The first building of the new Cook County Hospital was opened August 15. The entire eighth floor is arranged for surgical work; there are nine operating rooms, including two amphitheatres. The old hospital buildings were to be removed in order to make room for new structures which will cost, when completed, $16,000,000. A Maternity Hospital, costing $50,000, was given by Mr. Abraham Mendels, as an adjunct to the Hebrew Hospital and Asylum at Baltimore. A new hospital was opened at Hindman, Ky., and dedicated October 19. The investment represents $150,000 in buildings and equipments. The new Mayo Clinic Building, Rochester, Minn., was opened on March 6. The building is four stories in height, the top floor having an immense storeroom for the disposal of specimens and for the photographic equipment of the clinic. The formal opening of the Children's Hospital, Brookline, Mass., took place on April 15. The hospital cost about $650,000. The new St. Elizabeth's Hospital, Brighton, Mass., was opened September 1. It was erected at a cost of $250,000, and has accommodations for more than 200 patients. Plans for rebuilding the Ancon Hospital of Panama were under consideration, many of the existing buildings being in a bad condition and needing constant and expensive repairs. A committee consisting of Capt. R. E. Wood, Dr. A. B. Herrick, and Mr. Samuel Hitt, the canal architect, had the matter under advisement. The United States Quarantine Station, Pelican Island, was fitted up as an emergency hospital for contagious diseases with especial reference to bubonic plage.

Hospital activities in Canada were very marked during 1914, particularly in the newer western section. In the province of Ontario there were 89 public hospitals, 37 refuges, and 8 sanatoria for consumptives, 33 orphanages, 3 homes for incurables, and 31 county houses of refuge. During the year ending Sept. 30, 1913, 68,738 patients received treatment. The total amount expended during the year on hospitals was $3,155,340. In the province of Saskatchewan there were 26 hospitals, having a total bed capacity of 1200. The King George Isolation Municipal Hospital was put into operation; it cost $400,000, and the bed capacity is 200. At Bath, England, the fashionable watering-place of the 18th century, the Royal Mineral Water Hospital opened a research laboratory for the study of the pathology of rheumatoid arthritis, a disease which is much treated by mineral waters. The laboratory was opened by Sir William Osler. At Madrid, Spain, a new and elaborately equipped building was completed to accommodate the *Instituto de Higiene de Alfonso XII*. The institute was founded in 1899, but has long since outgrown its old quarters. Professor Ramón y Cajal is the director-in-chief.

The European war necessitated the creation of a great number of military and convalescent hospitals both on land and sea. Of the hospital ships the *Gascogne* is probably the largest and best equipped. The great transatlantic liner was completely transformed into a hospital ship for the accommodation of convalescents removed from auxiliary or temporary hospitals. In order that patients might have sufficient air space and light, the great saloons, music rooms, and reading-rooms were made over into dormitories. The saloons near the upper bridges were reserved for the wounded who could walk only with great difficulty. Dining-rooms were installed on the first deck. The American National Red Cross Ship sailed early in October for Rotterdam, where nurses grouped into units were landed for Germany, Austria, and Russia. Two units arrived in Vienna on October 14, one of which proceeded to Hungary, the other being assigned to duty in the suburbs of Vienna. The hospital ship that sailed from New York via the Mediterranean for Servia, reached Nish on October 15. The Maharaja Scindia of Gwalior, and other native Indian rulers presented a hospital ship named *Loyalty*, of 300 beds, for use in the war. The Grand Trunk Pacific steamer *Prince George* was transformed into a hospital ship and equipped with operating tables, wards, and elevators.

A contribution of $1000 was given by John A. Roebling to help maintain an American Red Cross hospital in Munich. The American Hospital in Paris, a magnificently equipped institution, entirely under American control, was transformed into a military and convalescent hospital. The managers expected to spend $500,000 and to furnish accommodations for 1200 sick. The cost of maintenance in the hospital was 10 francs a day per bed, in spite of the fact that all of the doctors and nurses are volunteers. An American Women's Hospital in London with accommodations for 200 patients, and equipped through the efforts of American women in London, was turned over to the war office for the care of wounded soldiers. Spain sent offers to France to receive 30,000 wounded soldiers in her hospitals. The hospital of Madrid offers to accommodate 6000.

HOTELS. See ARCHITECTURE.

HOUSE FLY. See ENTOMOLOGY.

HOUSTON, EDWARD JAMES. An American electrical engineer and writer, died March 1, 1914. He was born in Alexandria, Va., in 1847, and graduated from the Central High School in Philadelphia in 1864. He was one of the inventors of the Thomson-Houston system of arc lighting. He held chairs of professor of physics at the Medico-Chirurgical College in Philadelphia, and was emeritus professor of physical geography and natural philosophy at the Central High School, emeritus professor of physics at the Franklin Institute. He was a prolific writer on electricity, and wrote also many stories for boys. His writings include an edition to many text books on electrical subjects: *Arc Lighting* (1897, 1906); *Electrical Heating* (1897); *Telegraphy* (1906); *Telephony* (1906); *Electricity in Every Day Life* (1904); *Franklin as a Man of Science* (1906); *The Search for the North Pole* (1907); *Wonder Book of Light* (1908); *Five Months on a Derelict* (1908); *A Chip of the Old Block* (1910); *The Jaws of Death* (1910); and *The Yellow Magnet* (1911).

HOVEY, HORACE CARTER. American clergyman and scientist, died July 27, 1914. He was born at Rob Roy, Ind., in 1833, and graduated from Wabash College in 1857. He studied divinity at the Lane Theological Seminary, graduating in 1857, and in the following year was ordained to the Presbyterian ministry. From 1857 to 1862 he was a home missionary, and until 1909 held pastorates in many cities in the West and in New England. He retired from active service in the pulpit in 1909, and from that year until his death was engaged in literary and scientific work. He was well-known as a lecturer on scientific subjects. He made a special study of grottoes and caves, and is said to have explored more than 300 caverns and grottoes in the United States. He was an authority on this subject. His published writings include: *Celebrated American Caverns* (1882); *The Mammoth Cave of Kentucky* (1897, revised in 1909). He also contributed to magazines on the proceedings of scientific societies many articles on caverns in the United States and other countries. He wrote over 100 articles on natural science and travels in America, France, and Russia. He was editor of *The Hovey Book* of the descendants of Daniel Hovey of Ipswich, Mass.

HOWARD UNIVERSITY. An institution for higher learning at Washington, D. C., under the direct supervision of the national government. There were enrolled during the school year 1913–14, 1463 students, and the faculty numbered 110. In the autumn of 1914 the positions of director of physical culture, instructor in physical culture, and secretary of the Y. M. C. A. were added to the faculty. The college received during the year from the Emily H. Moir estate $16,500, and from the Henry C. Maynard estate $500 for endowment. The productive funds amount to $30,816, and the income in 1913–14 was $201,101. The library contains about 30,000 volumes. The president is Stephen M. Newman, A.M., D.D.

HUERTA, VICTORIANO. See MEXICO, *History*.

HUNGARY. See AUSTRIA-HUNGARY.

HYATT, STANLEY PORTAL. An English novelist and engineer, died June 24, 1914. He was born in 1877, and was educated at Dulwich College. As a boy he worked on a sheep station in New South Wales, afterwards went to Matabeleland, and when he was 21 years of age had set up the largest trading business in eastern Mashonaland. He helped erect the first mining machinery in the Chartered Territory. With his brother he explored the rubber jungles of Central Mozambique for the Portuguese Government, but on his return home found his business ruined through a new cattle disease, the African coast fever. He then began writing for several Indian and English papers. In 1904–05 he fought through the American campaign in the Philippines. After a period of hardship he returned to England and there wrote his first novel, *Marcus Hay*. This proved to be successful, and was followed in 1908 by *The Little Brown Brother*, which embodied his Philippine experiences. Other published writings include: *The Marriage of Hilary Carden; The Law of the Bolo; The Diary of a Soldier of Fortune;* and *Off the Main Track*.

HYDRIATICS. The use of water as a medical agent. See HYDROTHERAPY.

HYDROLOGY. The department of medical science which treats of the use of waters, especially mineral waters, for therapeutic purposes (Foster). See HYDROTHERAPY.

HYDROPATHY. A word of improper etymology formerly signifying the practice of an extinct sect which employed water treatment to the exclusion of medicine. See HYDROTHERAPY.

HYDROPHOBIA. See RABIES.

HYDROPLANE. See AËRONAUTICS.

HYDROTHERAPY. The science of the treatment of disease with water, ordinary still fresh water or mineral water. It includes BALNEOLOGY, which comprises all bathing for medical purposes, and CROUNOTHERAPY, which denotes the use of mineral waters by drinking. Hydrotherapy is not a specialty; it is a department of general practice of medicine, as the use of tonics or digestants might be considered a selective department. The internal use of alkaline-saline waters has a wider effect on physiological processes than that for which the cathartic, or alternative, or tonic dissolved ingredients account. An analogue exists between treatment of the human being with alkaline-salines with a resulting enkindling of vital processes, and the use of sea water by Jacques Loeb in causing developmental changes in the egg-cell. The inorganic medium seemed, in Loeb's demonstrations, to condition morphologic and chemical transformations, as is stated in a recent editorial in the *Journal of the American Medical Association*. The problem of the effecting of metabolic changes by thus altering the environment of cells is being tested, in the interest of rational balneology, at the laboratory of the Agricultural College in Berlin, under Zuntz.

The 35th annual congress of physicians interested in balneology was held at Hamburg, Germany, in March. Stress was placed on the necessity of excluding tuberculosis and grippe patients, as well as the carriers of those diseases, influenza being especially insidious because no appreciable immunity to it develops in the individual. Police regulations are advised to control the beds, the expectoration, food preparation and distribution, and soiled linen. A disinfection apparatus and a trained disinfector should be available in every large health resort. Desert climate was discussed, and its limitations were defined. Timely discovery and supervision of early kidney disorder were emphatically advocated, to postpone development of the severe degree of arteriosclerosis which renders so much kidney disease fatal. The limitations of diathermy were discussed, as well as its usefulness in acute joint diseases, chronic arthritis, neuritis, myalgia, epididymitis, prostatitis, and paræsthesias.

The European War has closed to the invalids of the world the spas of Belgium, Austria, Germany, and France, and probably England will also suffer in this respect. The trend of travel will probably be toward resorts providing balneologic and crounologic opportunities in the United States, and many scores of mineral-water spas will be prepared for the demand. Last year's YEAR BOOK enumerated some of the varieties of available waters, hot and cold. But a further division of the non-thermal waters must be made into still waters and those containing carbonic acid gas in solution, and therefore suitable for giving the "Nauheim system" of baths, for heart and arterial disorders, joint affections, some nervous disorders, anæmia, and early kidney disease. East of the Rocky Mountains, waters containing carbonic oxide in natural solution are apparently very rare, the great group of wells and springs at Saratoga Springs furnishing the only waters apparently available for the purpose, through proper equipment. Brine springs devoid of gas exist in different localities, and their product is used for the purpose by the addition of gas artificially, with a comparable, though not equivalent, result. Dr. Rupert Blue, of the Marine Hospital Service of the United States, stated that he believed the radio-active waters of the mineral springs of the United States as efficacious and valuable as those of Europe. See SARATOGA SPRINGS.

HYGIENE. The Annual Report of the Bureau of Health for the Philippine Islands, 1912 and 1913, reviewed the sanitary work there undertaken, and demonstrated that the remarkable sanitary triumphs achieved in the canal zone were being duplicated over a much more extensive territory in the Far East. Health conditions for the entire archipelago, according to the report, were excellent, with no serious epidemics. Installation of artesian wells had brought about a reduction in the death rate, and great improvement in the general health of the districts where they were used. In the city of Manila the death rate was cut down remarkably when water from the uninhabited watershed was consumed in place of the ordinary river water. The routine use of quinine among the inmates of the Iwahig Penal Colony demonstrates that malaria can be controlled in communities, even when they are situated in the midst of a malarial district. The inmates of the Penal Colony were said to be as healthy as the people of New York. Another field of activity was the elimination of intestinal parasites. In Manila, in spite of the fact that small-pox was constantly imported, there had not been a death from this disease during the year, because the population was kept thoroughly vaccinated. Formerly hundreds died of small-pox annually. Among the government employees for the fiscal year 1912–13 the death rate was 3.18 per thousand. When every allowance was made for the exceptional physical condition of the employees, their comparative youth, and careful selection, the death rate among them was still lower than that of the civilian population of any other country. The rate among Americans was 2.47 per thousand; among Filipinos it was 3.46. Beriberi still presented a problem, although it was known that this terrible disease was entirely prevented without increasing the cost of living, by substituting unpolished rice for polished rice. It was recommended that a tax of four centavos a kilogram be placed on polished rice, and that the unpolished be admitted duty free. This would make polished rice too expensive for general use, and limit it to the well-to-do who could protect themselves by a diversified diet. It was estimated that at least 5000 deaths from beriberi occur every year, and it seems probable that it is the cause of the high mortality, which would make it responsible for 20,000.

A committee appointed by the Council of Health and Public Instruction of the American Medical Association, to coöperate with the National Education Association began the study of rural schools and schoolhouses. It was found that surprisingly little was known of the actual conditions of rural schools and a preliminary survey was promptly undertaken, through the United States Bureau of Education. Professor Dressler made a careful study of many country school districts in the South. Special surveys in Connecticut, Vermont, and New York, Idaho, Pennsylvania, New Jersey, and Virginia were made, as well as the collection of statistics gathered from every State of the Union, resulting in the accumulation of a large mass of information which will be made public when it has been thoroughly digested. Dr. Wood, chairman of the Education Committee, stated that contrary to general belief, the country school child is from 15 to 20 per cent more defective than the city child. For example, in Pennsylvania a study was made of 1831 rural school districts, and the health of the children compared with that of the school children of Harrisburg, Altoona, and Pittsburgh. The percentage of defective children in Altoona was 69 per cent, in Pittsburgh, 72.2 per cent, while in the rural school districts defective children occur in 75 per cent. In New York City only 72 per cent of the children are at all defective. These figures indicate that among children in the same general class, the city school child has a slight advantage over his rural contemporaries. In the matter of nutrition also the school child of the city apparently has the advantage. The average of malnutrition among the school children in New York City is 23.3 per cent, while that of rural school children in the districts investigated is 31.2 per cent. The discrepancy between the two classes is even more marked in the case of mental defect. Statistics from twenty-five cities, and from rural districts in Pennsylvania, Massachusetts, New Jersey, Idaho, and Virginia were compared, and showed that the average of mental defect among city school children was 0.2 per cent; that among rural school children 0.8 per cent. Heart disease is twice as prevalent among country children; curvature of the spine was present in 0.13 per cent among the city children, 3.5 among rural school children. Ear troubles are 5 times and eye defects 4 times more frequent among country children. The same general condition was found as to adenoids and tonsils. Dr. Wood found in considering the causes for these startling conditions that even in the slums food is better prepared than in the country. Also oculists, dentists, and throat specialists are more easily reached in the city. Ventilation in country houses is unsatisfactory, where the children are more exposed to cold, heat, and dampness. School houses are often old, carelessly built, and badly ventilated, and general sanitary conditions often unspeakable. In many instances the only opportunities afforded for cleanliness are a pail of water, a dirty basin, and a common towel. The drinking water is often contaminated. In seven States there is no regulation of sanitary conditions of country schools. It is believed that the mere calling attention to this state of affairs will result in a country-wide improvement in rural school sanitation. See PUBLIC HEALTH SERVICE, *United States.*

INFANT HYGIENE. The Bureau of Child Hygiene of the Department of Health of New York City was organized late in 1908, its main work being the prevention of disease among children, and the education of the public in this direction. The work starts with the prenatal care of the child, and follows it through infancy and the school age. As a partial result of the Bureau activities, ophthalmia neonatorum has practically disappeared from New York City. 16,000 babies were last year under the care of the Bureau's nurses, with a mortality of 1.4 per cent. Since the organization of the Bureau the death-rate of babies under one year of age has been reduced from 144 per thousand births in 1907, to 101.9 in 1913. The only large city in the United States which shows a better rate than this is St. Louis, with 99.5 per thousand. Trachoma has been reduced from 20 per cent to 3 per cent, defective vision from 13.1 per cent to 8.5 per cent, defective nasal breathing from 18.7 per cent in 1909 to 8.9 per cent in 1913. The Bureau's activities are also directed to the enforcement of the child labor law, to seeing that children are physically and mentally able to work before they are granted working papers. The Bureau has 705 employees, including physicians and nurses. Its appropriation for 1913 was $652,000.

A museum for infants was established in Berlin in connection with the Kaiserin Augusta Victoria House, on June 4th. Here the mother may find all sorts of information in regard to birth, development, nutrition, and care of infants, and of herself. There are departments of artificial feeding, physical care, general hygiene, and diseases of infants. All this information is illustrated by charts, models, photographs, etc.

ICELAND. A Danish crown colony. Area, about 40,456 square miles, of which only 16,245 are inhabited; population 1911, 85,183. The trade in 1911 amounted to 14,123,000 kroner imports, and 15,691,000 kroner exports—6,753,711 kroner salt cod, 1,646,020 fish oil, 1,246,242 wool, 966,833 salt mutton, etc. The Minister for Iceland resides at Reikjavik.

On Easter Sunday Iceland voted on the new Constitution which had been adopted by the Icelandic Parliament in 1911, and subsequently approved by Denmark. Henceforth Iceland was to enjoy complete control of its domestic affairs, with universal suffrage for men and women alike. In the elections to the Legislature the parties opposed to the government were able to obtain twenty out of thirty-four seats.

IDAHO. POPULATION. The estimated population of the State on July 1, 1914, was 395,407. The population in 1910 was 325,594.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only:

		Acreage	*Prod. bu.*	*Value*
Corn	1914	19,000	589,000	$424,000
	1913	14,000	448,000	305,000
Wheat	1914	549,000	14,862,000	12,495,000
	1913	510,000	14,094,000	8,879,000
Oats	1914	382,000	14,608,000	5,551,000
	1913	325,000	15,112,000	4,836,000
Rye	1914	3,000	60,000	40,000
	1913	3,000	66,000	38,000
Barley	1914	185,000	7,080,000	3,515,000
	1913	180,000	7,560,000	3,629,000
Potatoes	1914	34,000	5,270,000	2,530,000
	1913	34,000	5,780,000	2,890,000
Hay	1914	705,000	*a*1,868,000	13,686,000
	1913	705,000	2,044,000	14,717,000

a Tons.

Mineral Production. The mine output of gold, silver, copper, lead, and zinc in 1913 was valued at $24,149,049, compared with a value of $21,466,521 in 1912. The production of all metals except gold increased. The Cœur d'Alene regions, the main producing area of the State, had a greatly increased production, especially in silver, lead, and zinc. The gold production had a value of $1,344,559, or $36,655 less than that of 1912. The production of silver increased from 8,294,745 ounces, valued at $5,101,268 in 1912, to 9,989,193 ounces, valued at $6,033,473 in 1913. There was an increase in the copper output from 7,492,152 pounds, valued at $1,236,205 in 1912, to 9,592,966 pounds, valued at $1,486,910 in 1913. All records were broken in the production of lead, which increased from 284,185,657 pounds, valued at $12,788,355 in 1912, to 317,871,945 pounds, valued at $13,986,366 in 1913. An unusual production of zinc ore increased the spelter output from 13,905,502 pounds, valued at $959,479 in 1912, to 23,173,953 pounds, valued at $1,297,741 in 1913. There were in 1913, 384 producing mines. During the year two smelting plants were active, one a lead plant at Clayton, and the other a copper matting plant at Ivers. Investigations by the United States Geological Survey in 1913 revealed the existence of several new mining districts in the State. These include the Loon Creek, Yankee Fork, and Bay Horse districts. The area includes several promising ore deposits, and a few mines where a considerable tonnage is blocked out, awaiting more advantageous transportation facilities. These districts are in the northwestern part of Custer County. Additional investigations by the survey revealed the existence of large areas of coal beds in Cassia County. The coal is lignite. Other metals mined in the State include gem materials, clays, lime, mica, phosphate rock, salt, sand and gravel, sand-lime brick, and stone. Small quantities of iron and tungsten are also produced. The total value of the mineral production in 1913 was $24,565,826, compared with $21,816,390 in 1912.

The mines of the State made a record production of silver, lead, and zinc in 1914, according to the estimates of the United States Geological Survey. The value of the gold, silver, copper, lead, and zinc in 1914 was about $24,141,000, compared with $24,149,049 in 1913. The gold output decreased from $1,344,559 in 1913 to $1,115,000 in 1914, but the production of silver increased from 9,889,193 ounces in 1913 to about 13,000,000 ounces in 1914, or about 30 per cent. The copper production was greatly affected by market conditions, and decreased from 9,592,966 pounds in 1913 to 5,500,000 pounds in 1914. The mine production of lead in 1914 was about 345,000,000 pounds, or nearly 9 per cent more than that of 1913, which was a record production up to that time. The value of the output, however, was slightly less in 1914 on account of less favorable price conditions. Shipments of zinc ore and concentrate from the mines of the State increased from 33,178 tons in 1913 to about 51,000 tons in 1914, and contained about 45,430,000 pounds of zinc.

Transportation. The total railway mileage in Idaho for the year ending June 30, 1914, was 3577. The roads having the longest mileage were the Oregon Short Line Railroad, 1817; Chicago, Milwaukee and St. Paul, 251; Oregon-Washington Railroad and Navigation Company, 159; Spokane International Railway, 162; and the Great Northern, 133.

Education. The enrollment in the schools of the State on June 30, 1912, was 84,791, and the average daily attendance was 66,359. There were 2710 teachers, of whom 2021 were women and 689 men. The average monthly salary paid to women teachers was $68.88, and to men teachers, $87.21. The estimated value of all school property was $7,090,106. The total number of city and town high schools was 102, and of rural high schools 15. In the city and town high schools were enrolled 4066 pupils, and in the rural high schools 304. The total expenditures in 1912 amounted to $3,225,496.

Finance. The report of the State Treasurer brought a balance at the beginning of the fiscal year 1914 of $1,091,151. It showed a balance for the biennial period 1912–14 of $26,860. The receipts for the period amounted to $2,143,122, and the payments to $2,169,817, leaving a balance at the end of the year of $165.85. The funded debt of the State is made up of a great many small issues of bonds. In nearly every case these were issued for public improvements either for roads, bridges, or for improvements or buildings of State institutions. On Sept. 30, 1912, two larger issues, dated 1905 and 1911, were both for the capitol building, and amounted to $100,000 and $750,000 respectively. The total funded debt on that date amounted to $2,364,250. The floating debt was $86,453. The per capita debt was $5.92. The total outstanding bonds of the State on Sept. 30, 1914, amounted to $2,390,250.

Charities and Corrections. The charitable and correctional institutions under control of the State include the State Penitentiary at Boisé; Industrial Training School at St. Anthony; Idaho Soldiers' Home at Boisé; Deaf and Blind School at Gooding; Idaho Insane Asylum at Blackfoot; and Northern Idaho Insane Asylum at Orofino.

Politics and Government. There was no meeting of the State Legislature in 1914 as the sessions are biennial, and the last was held in 1913. Elections were held for State officers and for United States Senator. At the nominating primaries held in July, J. M. Haines was nominated by the Republicans, Moses Alexander by the Democrats, and H. E. McElroy by the Progressives. For United States Senator the Republicans renominated J. H. Brady, the Democrats nominated J. H. Hawley, and the Progressives P. Clagstone. At the elections held on November 3 Mr. Alexander, the Democratic candidate, was elected, with 49,627 votes, compared with 40,349 for Mr. Haines, and 10,583 for Mr. McElroy. Both Republican and Democratic votes showed an increase over the vote in 1912, while the Progressive vote fell off from 25,527 in 1912 to 10,583 in 1914. Senator Brady was reëlected with 47,486 votes, compared with 10,286 for Mr. Hawley, the Democratic candidate, and 10,321 for Mr. Clagstone, Progressive. The Republicans elected two representatives at large.

State Officers 1915. Governor, Moses Alexander; Lieutenant-Governor, H. H. Taylor; Secretary of State, Geo. R. Barker; Treasurer, J. W. Eagelson; Auditor, Fred L. Huston; Attorney-General, J. H. Peterson; Superintendent of

Education, Bernice McCoy—all Republicans except Governor.

JUDICIARY. Supreme Court: Chief Justice, Isaac N. Sullivan, Rep.; Associate Justices, Warren Truitt, Rep.; one vacancy; Clerk, I. W. Hart.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	19	31	50
Democrats	11	28	39
Progressives	2	1	3
Socialists	1	0	1
Undecided	0	1	1
Republican majority	5	1	6

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

IDAHO, UNIVERSITY OF. An institution founded at Moscow, Idaho, in 1892. The total enrollment for the year 1914–15 was 595, and the faculty numbered 75, besides 13 on the Agricultural Extension staff. There were no notable changes made in the faculty during the year and no noteworthy benefactions were received. The university is supported by appropriations from the State Legislature. The total expenditures for all purposes in 1913–14 was about $385,000. The president is Melvin Amos Brannon, Ph.D.

ILLINOIS. POPULATION. The estimated population of the State on July 1, 1914, was 5,986,781. In 1910 the population was 5,638,591.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only:

		Acreage	*Prod. bu.*	*Value*
Corn	1914	10,346,000	300,034,000	$183,021,000
	1913	10,450,000	282,150,000	177,754,000
Wheat	1914	2,500,000	46,250,000	46,712,000
	1913	2,240,000	41,888,000	36,024,000
Oats	1914	4,300,000	125,990,000	55,436,000
	1913	4,375,000	104,125,000	39,568,000
Rye	1914	49,000	784,000	666,000
	1913	49,000	808,000	525,000
Barley	1914	55,000	1,622,000	989,000
	1913	54,000	1,404,000	800,000
Potatoes	1914	124,000	7,440,000	4,538,000
	1913	125,000	5,750,000	5,118,000
Hay	1914	2,250,000	*a* 1,912,000	27,533,000
	1913	2,500,000	2,450,000	34,545,000
Tobacco	1914	600,000	*b* 700,000	56,000
	1913	800,000	468,000	64,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. In 1913 Illinois was third among the States in the value of its mineral production. The State owes its prominence as a mining State chiefly to its importance as a producer of coal and petroleum, and to the development of its clay-working industries. In coal production Illinois is exceeded only by Pennsylvania and West Virginia, and in the production of petroleum only by California and Oklahoma. In the manufacture of clay products Illinois ranks fourth. The total value of the mineral production in 1913 was $131,825,221, of which the coal mines contributed $70,313,605, or 53 per cent; the petroleum wells, $30,971,910, or 23 per cent; and the brickyards, tile works, and potteries $15,195,874, or 12 per cent. In 1912 the value of the total mineral production was $123,068,867. The coal mined in Illinois in 1913 amounted to 61,618,744 short tons, valued at $70,313,605, compared with 59,885,226 short tons in 1912, a gain of 1,733,518 tons. The value, however, showed scarcely an increase in 1913, due to the low average price per ton. It declined from $1.17 in 1912 to $1.14 in 1913. The decrease in the production was due to labor troubles, to inadequate transportation facilities, and to floods which occurred in March and April, and a drought which began in June and lasted until October. There are more coal-producing counties in Illinois than in any other State in the Union. Of the 102 counties in the State, half are or have been producers of coal. Until 1909 Illinois ranked second in importance among the coal-producing States. In that year it dropped behind West Virginia and has remained the third State in coal-producing importance. The coal production of the State in 1914, according to the estimates of the United States Geological Survey, decreased about 10 per cent, compared with 1913, and as the markets were oversupplied and competition for trade was keen, prices in general fell below a profit-making figure. In the manufacture of pig iron Illinois stands second only to Pennsylvania and Ohio. The value of the pig iron products is not included in the total value of mineral products. If it was added the value would be increased by nearly $55,000,000. Another important industry of the State is the manfacture of Portland cement. This product in 1913 had a value of $4,784,696, an increase of $1,340,611 over the previous year. The value of the stone produced in 1913 was $4,140,953. Illinois ranks first in the production of fluorspar, and in the production of tripoli. Other mineral products are asphalt, lead, lime, mineral paint, mineral water, pyrite, silver, sulphuric acid, and zinc.

EDUCATION. The school population of the State on June 30, 1914, was 1,650,258. The teachers numbered 31,805. The average annual wages paid to teachers was $684.83. The amount expended for all school purposes in 1914 was $40,287,856.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions under the control of the State Board of Charities include the Lincoln State School and Colony, at Lincoln; the Soldiers' Orphans' Home, at Normal; the Kankakee State Hospital, at Kankakee; the Dunning State Hospital, at Chicago; the Soldiers' Home, at Quincy; the Anna State Hospital, at Anna; the Jacksonville State Hospital, at Jacksonville; the Elgin State Hospital, at Elgin; the Chester State Hospital, at Chester; the Industrial Home for the Blind, at Chicago; the Eye and Ear Infirmary, at Chicago; the Watertown State Hospital, at Watertown; the State Training School for Girls, at Geneva; the St. Charles School for Boys, at St. Charles; the Soldiers' Widows' Home, at Wilmington; and the Peoria State Hospital, at Peoria. The Alton State Hospital and a Colony for Epileptics were created by the Legislature of 1913. The total population of these institutions on June 30, 1913, was approximately 19,816, and the total appropriations for the two years beginning July 1, 1913, were approximately $13,000,000, for maintenance, improvement, and extension. The correctional institutions of the State are the State prisons at Joliet and Chester, and the State Reformatory for Boys at Pontiac.

FINANCE. The report of the State Treasurer for the biennial period 1912–14 shows a balance in the Treasury on Oct. 1, 1912, of $5.499,210. The receipts from all sources from Oct. 1, 1912, to Sept. 30, 1914, amounted to $39,708,784; the disbursements for the same period amounted to $32,952,862, leaving a balance on Sept. 30, 1914, of $12,255,132. The bonded debt of the State outstanding Oct. 1, 1914, was $17,500.

TRANSPORTATION. The total mileage of railways in the State on June 30, 1913, was 12,168. This was of main lines only. There were in addition 3024 miles of additional main track, 563 miles of industrial track, and 7496 miles of yard tracks and sidings, or a total of 23,252 miles of track of all sorts. There were in the same year 1544 lines of surface and elevated electric railways, including only main lines. In railway mileage Illinois exceeds every other State except Texas.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914 as the sessions are biennial, and the last was held in 1913. In spite of the fact that there were no elections for State officers in 1914 it was an interesting year politically. The term of Senator Sherman who was elected in 1913 to fill out the unexpired term of William Lorrimer, expired in 1915, and it was necessary to elect his successor. Women for the first time in the history of the State took part in general elections. These were held in April, chiefly for municipal officers. In Chicago 47,000 women voted. This was about 30 per cent of those who had registered. The percentage of men who voted, compared with those who registered, was about 34 per cent. Women were candidates for the board of aldermen in Chicago in eight districts. None of these candidates were elected, but in other parts of the State 26 women were elected to the office of town collector, and three women made town clerks. The influence of women was exerted effectively in voting against saloons. Sixteen counties which heretofore were license counties voted against license. Included in these counties were eleven cities. As a result of these elections, over 1000 saloons went out of business in the State.

The contest for the nomination of United States Senator was a very aggressive one. Senator Sherman was a candidate for reëlection, and opposed to him for nomination on the Republican ticket was William E. Mason, former United States Senator from Illinois. The Democratic nomination was contested for by Roger C. Sullivan, for many years known as the Democratic boss in Chicago, and Lawrence B. Springer, also a well-known Democratic politician. In the primary elections, held on September 9, Senator Sherman was renominated by the Republicans, Mr. Sullivan by the Democrats, and Raymond Robins by the Progressives. All the candidates made an active campaign for reëlection, and on account of the division of the Republican party into two parts, it was quite generally believed that Mr. Sullivan would be successful. In the voting on November 3, however, Mr. Sherman was reëlected with 390,661 votes, compared with 373,403 cast for Mr. Sullivan, and 203,027 for Mr. Robins. This may be compared with the voting in 1912 when the Republicans cast 253,613 votes, the Democrats 405,048, and the Progressives 386,478. It will thus be seen that while the Republicans gained nearly 50,000 votes, the Democrats lost over 30,000, and the Progressives over 180,000. Mr. Sullivan carried Chicago and Cook County by approximately 75,000 votes, but this was overcome by the preponderance of votes for Sherman in other parts of the State. Not only were the Republicans successful in electing their Senator, but they also succeeded in electing thirteen members of the House of Representatives. Among these were Joseph G. Cannon, former speaker of the House of Representatives, and William B. McKinley, who in 1912 managed the presidential campaign for President Taft. William B. Hinebaugh of the twelfth district, chairman of the National Progressive Committee, and a member of Congress since 1912 was defeated by C. E. Fuller, Republican.

OTHER EVENTS. By an explosion in the mine of the Franklin Coal Company at Royalton, on October 27, over 100 men were killed.

STATE OFFICERS, 1915. Governor, Edward F. Dunne, Democrat; Lieutenant-Governor, B. O'Hara, Democrat; Secretary of State, L. G. Stevenson, Democrat; Treasurer, Andrew Russell, Republican; Auditor, James J. Brady, Democrat; Attorney-General, P. J. Lucey, Democrat; Adjutant-General, Frank S. Dickson, Republican; Superintendent of Public Instruction, Francis G. Blair, Republican; Superintendent of Insurance, Rufus M. Potts, Democrat.

JUDICIARY. Supreme Court: Chief Justice, George A. Cook, Democrat; Associate Justices, Alonzo K. Vickers, Republican; Wm. M. Farmer, Democrat; F. K. Dunn, Republican; Chas. C. Craig, Democrat; James H. Cartwright, Republican; O. N. Carter, Republican: Clerk of the Court, J. McCan Davis, Republican.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	25	52	77
Democrats	24	73	97
Progressives	2	25	27
Socialists		3	3

The representatives in Congress will be found in the section *Congress*, of the article UNITED STATES.

ILLINOIS, UNIVERSITY OF. A State university for higher education at Urbana and Chicago, founded in 1867. The total number of students enrolled in the several departments on Nov. 1, 1914, was 5664, distributed as follows: liberal arts and sciences, men, 1079; women, 650—engineering, men, 1195; women, 3—agriculture, men, 934; women, 144—music, men, 4; women, 64—law, men, 112—library school, men, 3; women, 43—graduate school, men, 282; women, 58—summer session, 938—medicine, men, 264; women, 23—dentistry, men, 83; women, 1—pharmacy, men, 191; women, 8. The most noteworthy benefaction during the year was the gift by Capt. Thomas J. Smith, of Champaign, a former president of the board of trustees of the university, of extensive farm lands valued at $215,000 for the purpose of providing funds to erect a building for the School of Music; this being the largest single gift ever received by the university. The alumni of the university are at work soliciting funds for a building in memory of John Milton Gregory, the first president of the institution. The endowment fund of the university amounts to about $650,000, and the total income to about $2,825,000. The library contains about 328,000 volumes. The president of the university is Edmund Janes James, Ph.D., LL.D.

IMMIGRATION AND EMIGRATION. The total number of immigrants arriving in the United States in the fiscal year 1914 was 1,403,081. Of these, 1,218,480 were immigrants and 184,601 nonimmigrants. The term "immigrant" relates to permanent arrivals and "nonimmigrant" signifies temporary arrivals. The total immigration for the year was a decrease of 24,146 compared with 1913. Rejections for the year amounted to 33,041 aliens, or 2.3 per cent of the applicants, compared with 19,938, or 1.4 per cent for the previous year. In 1914, 4610 aliens were arrested and expelled from the country, compared with 3461 for the previous year. During the fiscal year a total of 303,338 emigrant aliens and 330,467 nonemigrant aliens departed from the United States, making a total of 633,805. The net increase in population, therefore, resulting from immigration and emigration of aliens was for the year 769,276. The net increase corresponding with the foregoing for the fiscal year 1913 was 815,303. Of the total number of immigrants arriving in 1914, 248,729 were common unskilled laborers and 201,389 were classified as skilled laborers. The departures of unskilled laborers in 1914 numbered 274,307 and of skilled laborers 85,666.

Of the 1,218,480 immigrant aliens admitted, 981,692 were between the ages of 14 and 44, 158,621 were under 14, and 78,167 were 45 or over. Of those admitted, 260,152 could neither read nor write and 3074 could read but not write. These figures do not include aliens less than 14 years of age. Thus 24.8 per cent of the aliens admitted in 1914 were illiterate.

During the year 8604 Japanese applied for admission to continental United States, of whom 8462 were admitted and 142 debarred. Of the total number applying, 8350 were in possession of passports and 254 were not. Of those holding proper passports, 8259 were found on examination to belong to the classes entitled by the understanding between the Japanese and the United States governments to receive passports. During the year 5773 Chinese were admitted and 410 were deported. The following table shows the immigration for the fiscal years ended July 30, 1913–14, by race or people.

Race or People	*1913*	*1914*
African (black)	6,634	8,447
Armenian	9,353	7,785
Bohemian and Moravian (Czech)	11,091	9,928
Bulgarian, Servian, and Montenegrin	9,087	15,084
Chinese	2,022	2,354
Croatian and Slovenian	42,499	37,284
Cuban	3,099	3,539
Dalmatian, Bosnian, and Herzegovinian	4,520	5,149
Dutch and Flemish	14,507	12,566
East Indian	188	172
English	55,522	51,746
Finnish	12,756	12,805
French	20,652	18,166
German	80,865	79,871
Greek	38,644	45,881
Hebrew	101,330	138,051
Irish	37,023	33,898
Italian (north)	42,534	44,802
Italian (south)	231,613	251,612
Japanese	8,302	8,941
Korean	64	152
Lithuanian	24,647	21,584
Magyar	30,610	44,538
Mexican	10,954	13,089
Pacific Islander	11	1
Polish	174,365	122,657
Portuguese	13,566	9,647
Rumanian	13,451	24,070
Russian	51,472	44,957
Ruthenian (Russniak)	30,588	36,727
Scandinavian (Norwegians, Danes, and Swedes)	38,737	36,053
Scotch	21,293	18,997
Slovak	27,234	25,819
Spanish	9,042	11,064
Spanish American	1,363	1,544
Syrian	9,210	9,023
Turkish	2,015	2,693
Welsh	2,820	2,558
West Indian (except Cuban)	1,171	1,396
Other peoples	3,038	3,830
Total	1,197,892	1,218,480

Efforts were made throughout the year to promote a beneficial distribution of aliens among the several States and Territories, in accordance with the immigration act of Feb. 20, 1907. During the year an investigation was carried on as to the conditions resulting in immigration from eastern Europe. The investigation included inquiries into the causes of such immigration; whether it is promoted in violation of United States law; whether emigrants are subjected to undue hardships and exploitation while in transit; whether diseased or otherwise inadmissible emigrants are brought to the United States ports when the fact that they are excluded classes might be determined before leaving home; whether foreign governments will coöperate in disseminating information relative to the United States law, in order that intending emigrants may know before leaving home the condition of admission to the United States; and what other measures should be taken to remedy evils that may exist. It was found that for the most part emigration from eastern Europe is due to the fact that the demand for labor is much greater and the wages paid far higher in the United States than in the countries from which the immigrants come. Other important reasons are avoidance of military service and dissatisfaction with political, social, and religious conditions. The chief secondary causes are the advice and often the financial assistance of previous immigrants, and the activity of steamship ticket agents and brokers. It was found that emigration was to a considerable extent promoted by steamship agents in violation of the law. It was found also that there was no well-established evidence as to undue hardships and exploitation of emigrants while in transit. The investigation revealed the fact that the eastern European nations recognized emigration as a natural movement which cannot well be stopped but which ought to be kept under careful control. In every country there is a more or less widespread sentiment in favor of restricting emigration or of forbidding it altogether, but as a rule it is considered to be an economic necessity. Hungary and Bulgaria have enacted comprehensive emigration laws, and Russia, Austria, Greece, and Servia are contemplating such legislation. It is contemplated that these laws shall conform to the immigration laws of the country for which the immigration is destined. On the whole the policies of the emigrant-furnishing countries in several important particulars are essentially the same as the policy of the United States.

As a result of the investigation it is recommended that a branch of the United States Immigration Service be permanently established in Europe and Asiatic Turkey. It is further recommended that a thorough study of the agricultural distribution of immigrants be made and that the knowledge of United States law should be promoted abroad.

The general Immigration Bill, which in 1912 was vetoed by President Taft on account of the literacy provision, was introduced into the Sixty-third Congress in practically the same form. It was passed by the House of Representatives in the early part of the year. An attempt was made to attach to the bill an amendment excluding all Asiatics, except those having rights under existing treaties or agreements. This, however, was rejected by a vote of 203 to 54. An anti-Japanese amendment was rejected by a vote of 182 to 6. The bill bars aliens over 16 years of age who cannot read some language. The bill was not taken up in the Senate until December and no vote was taken on it in 1914.

INCANDESCENT LAMPS. See ELECTRIC LIGHTING.

INCINERATORS (FOR GARBAGE AND REFUSE). See GARBAGE AND REFUSE DISPOSAL.

INCOME TAX. See TAXATION.

INCREASED COST OF LIVING. See PRICES, *passim*, and FOOD AND NUTRITION.

INDIA, BRITISH. British India is that part of East India administered by the British sovereign (as Emperor of India) through the Governor-General of India in council. India, as defined by the British Parliament, includes British India and the native States under British suzerainty. The capital of British India is Delhi.

AREA AND POPULATION. The combined area of British India and the native States under British suzerainty, as covered by the 1911 census, is stated at 1,802,192 square miles, or somewhat more than the area of the United States prior to the annexation of Texas in 1845, which was 1,792,223 square miles. British territory, amounting to 1,093,074 square miles, is divided into 15 provincial governments. Interprovincial transfers of territory, and transfers from native to British territory, and vice versa, occasionally take place, so that censuses as originally reported are subject to adjustment. The accompanying table shows the area of the British provinces and of the groups of native States, and the population according to the censuses of March 15, 1901, and March 10, 1911. The population returned at these censuses and the areas have been adjusted, as far as possible, to allow for subsequent interprovincial transfers. Sikkim, which in 1901 was classed under the Bengal States, is shown separately in the 1911 census. The tribal areas in the North-West Frontier Province are now shown under native States. Manipur State, which in 1901 was included under British territory, is now included under native States. The area newly included within the scope of the 1911 enumeration had a population (for the most part estimated) of 1,731,116; of this number, 1,604,265 were returned from the agencies and tribal areas of the North-West Frontier Province. Subsequent to the 1911 census, that is, April 1, 1912, the Province of Eastern Bengal and Assam (which was erected from Eastern Bengal and the Province of Assam Oct. 16, 1905) and the Province of Bengal were reconstituted and erected into three provinces. These provinces are Bengal (which received the style "presidency"), Bihar and Orissa, and Assam. On Oct. 1, 1912, still another new province, Delhi, was erected out of the division of Delhi in the Punjab; its area is provisionally stated at 557 square miles, and its 1911 population at 391,828.

The area censused on March 10, 1911, and the population on that date, as compared with the population on March 15, 1901, are as follows (the figures being adjusted, as far as possible, to subsequent interprovincial transfers):

		Population	
Provinces:	*Sq. m.*	*1901*	*1911*
Ajmer-Merwara ..	2,711	476,912	501,395
Andamans and Nicobars	3,143	24,649	26,459
Assam	53,015	5,841,878	6,713,635
Baluchistan	54,228	382,106	414,412
Bengal (Pres.) ..	78,669	42,141,477	45,483,077
Bihar and Orissa..	83,181	33,242,783	34,490,084
Bihar *	42,361	23,360,212	23,752,969
Orissa *	13,743	4,982,142	5,131,753
Chota Nagpur * .	27,077	4,900,429	5,605,362
Bombay (Pres.) ..	123,059	18,559,650	19,672,642
Bombay †	75,998	15,304,766	16,113,042
Sind †	46,986	3,210,910	3,513,435
Aden †	80	43,974	46,165
Burma	230,839	10,490,624	12,115,217
Central Provinces and Berar ..	99,823	11,971,452	13,916,308
Coorg	1,582	180,607	174,976
Madras (Pres.) ..	142,330	38,229,654	41,405,404
North-West Frontier Province	13,418	2,041,534	2,196,933
Punjab (incl. Delhi Province) ...	99,779	20,330,337	19,974,956
United Provs. of Agra and Oudh	107,267	47,692,277	47,182,044
Agra ‡	83,109	34,859,109	34,624,040
Oudh ‡	24,158	12,833,168	12,558,004
British India.	1,093,074	231,605,940	244,267,542
Native States and Agencies:			
Assam State (Manipur) ..	8,456	284,465	346,222
Baluchistan Sts. ..	80,410	428,640	396,432
Baroda State	8,182	1,952,692	2,032,798
Bengal States	5,393	740,299	822,565
Bihar and Orissa States	28,648	3,314,474	3,945,209
Bombay States ...	63,864	6,908,559	7,411,675
Central India Ag..	77,367	8,497,805	9,356,980
Central Provs. Sts.	31,174	1,631,140	2,117,002
Hyderabad States.	82,698	11,141,142	13,374,676
Kashmir State ...	84,432	2,905,578	3,158,126
Madras States	10,084	4,188,085	4,811,841
Cochin §	1,361	812,025	918,110
Travancore § ...	7,129	2,952,157	3,428,975
Mysore State	29,475	5,539,399	5,806,193
N.-W. F. Prov. (agencies, etc.).	25,500	83,962	1,622,094
Punjab States	36,551	4,424,398	4,212,794
Rajputana Agency.	128,987	9,853,366	10,530,432
Sikkim	2,818	59,014	87,920
United Provs. Sts.	5,079	802,097	832,036
Native States...	709,118	62,755,116	70,864,995
Total India ..	1,802,192	294,361,056	315,132,537

* Included in the Bihar and Orissa Province. † Included in the Bombay Presidency. ‡ Included in the United Provinces. § Included in the Madras States.

The population of the French and Portuguese settlements is not shown in the table. A Portuguese census of Dec. 31, 1910, returned a population of 604,930, and a French census of March 10, 1911, 282,472. Geographically a part of India are the Himalayan States of Nepal and Bhutan, both regarded as independent (though the foreign relations of Bhutan are under British control). Little is definitely known of the population of Nepal, but it may be estimated at 3,000,000, and that of Bhutan at 250,000. If these figures be included, the population of Indian territory becomes about 319,270,000. If Burma and Aden be excluded as not being geographically a part of India, the total amounts to about 307,109,000.

In the decade 1891–1901, the population increase in British India was about 4.7 per cent, while in the native States there was a decrease of about 5 per cent; there being for India an increase of 2.5 per cent. From 1901 to 1911, there was an increase of 5.5 per cent in British India, and of 12.9 per cent in the native States; the increase for India being 7.1 per cent. The largest increase during 1901–11 was in the North-West Frontier Province agencies and tribal areas, 1831.9 per cent; but this enormous percentage was due to an extension of the censused area rather than to any unusual increase in the actual number of inhabitants. The largest decrease, 7.5 per cent, was in the Baluchistan States; this large percentage, too, is only apparent, as the figures for 1901 were largely based on estimates which were doubtless excessive. If the Baluchistan States and the North-West Frontier Province agencies and tribal areas be omitted as not being representative of the actual facts, the only decrease in the population of the groups of native States, as shown in 1911, was in the Punjab States, 4.8 per cent; and the greatest increase in Sikkim, 49.0 per cent. In British territory the greatest increase was in the Central Provinces and Berar, 16.2 per cent; and the greatest decrease in Coorg, 3.1 per cent. Other large increases were: Central Provinces States, 29.8 per cent; Manipur, 21.7; Hyderabad State, 20.0; Bihar and Orissa States, 19.0; Central Provinces and Berar, 16.2; Burma, 15.5; Assam, 14.9; Kashmir, 14.9; and Madras States, 14.9.

Of the total population in 1911, about 78 per cent was in British India, and about 22 per cent in the native States. Males numbered 161,326,110, and females 153,806,427. The census shows the population according to civil condition in the case of 312,643,693 persons; certain details of interest are given in the following table:

	Males	*Females*	*Total*
Total	160,001,322	152,642,371	312,643,693
Unmarried	78,384,686	52,516,947	130,901,333
Married, total	72,906,881	73,704,162	146,611,043
" 0 to 5 yrs.	151,518	302,425	453,943
" 5 to 10 yrs.	810,577	2,219,778	3,030,355
" 10 to 15 yrs.	2,403,136	6,555,424	8,958,560
" 15 to 20 yrs.	4,364,438	10,087,024	14,451,462
" 20 to 25 yrs.	7,785,484	12,663,431	20,448,915
" 25 to 30 yrs.	11,116,064	12,183,406	23,299,470
Widowed, total *	8,709,755	26,421,262	35,131,017
" 0 to 5 yrs.	6,668	17,703	24,371
" 5 to 10 yrs.	35,098	94,270	129,368
" 10 to 15 yrs.	91,995	223,042	315,037
" 15 to 20 yrs	177,694	466,834	644,528
" 20 to 25 yrs.	380,803	901,754	1,282,557
" 25 to 30 yrs.	626,682	1,389,685	2,016,267

* Including divorce.

In 1911, persons of Aryan vernacular numbered about 232.82 million; of Dravidian vernacular, 62.72 million. Persons whose vernacular was Hindi numbered about 82 million; Bengali, 48.37; Telugu, 23.54; Marathi, 19.81; Tamil, 18.13; Punjabi, 15.88; Rajasthani, 14.07; Western Hindi, 14.04; Gujarati, 10.68; Kanarese, 10.53; Oriya, 10.16; Burmese, 7.89; Malayalam, 6.79; Western Punjabi, 4.78; Sindhi, 3.67; Eastern Hindi, 2.42; Santali, 2.14; Pashto, 1.55; Assamese, 1.55; Gond, 1.53; Western Pahari, 1.53; Kashmiri, 1.18; Karen, 1.07; Shan, 0.90.

According to occupation, the population is reported as follows in 1911, in thousands: Agriculture and grazing, 224,696; fishing and hunting, 1855; mines, quarries, etc., 530; industry, 35,323; transportation (including postal, telegraph, and telephone services), 5029; trade, 17,839; army and navy, 670; police, 1729; public administration, 2648; professions and liberal arts, 5325; domestic service, 4599; other, 13,227; total censused in respect of occupation, 313,470.

Population of the larger cities according to the 1911 census: Calcutta, 896,067 (with suburbs, 1,222,313); Bombay, 979,455; Madras, 518,660; Hyderabad (including Secunderabad, Bolaram, and the Residency Bazars), 500,623; Rangoon, 293,316; Lucknow, 259,798; Delhi, 232,837; Lahore, 228,687; Ahmedabad, 215,835; Benares, 203,804; Bangalore (including civil and military station), 189,485; Agra, 185,449; Howrah (included above in Calcutta suburbs), 179,006; Cawnpore, 178,557; Allahabad, 171,697; Poona, 158,856; Amritsar, 152,756; Karachi, 151,903; Mandalay, 138,299; Jaipur, 137,098; Patna, 136,153; Madura, 134,130; Bareilly, 129,462; Srinagar, 126,344; Trichinopoly, 122,028; Meerut, 116,227; Surat, 114,863; Dacca, 108,551; Nagpur, 101,415; Jubbulpore, 100,651; Baroda, 99,345; Multan, 99,243; Peshawar, 97,935; Rawalpindi, 86,483; Ajmer, 86,222; Moradabad, 81,168; Umballa, 80,131; Calicut, 78,417; Bhagalpur, 74,349; Rampur, 74,316; Shahjahanpur, 71,778; Mysore, 71,306; Koil (Aligarh), 64,825; Sholapur, 61,345; Salem, 59,153; Bhopal, 59,153; Fyzabad-cum-Aiodhya, 54,655; Gaya, 49,921; Lashkar, 46,952; Indore, 44,947; Quetta, 33,922; Mirzapur, 32,446.

Religion. The table below shows the population by religion in 1901 (with the proportion per 10,000) and in 1911. That the 1911 total is 313,523,981 instead of 315,132,537 (the total returned by the census) is due to the fact that religion was not recorded in the case of 1,608,556 persons in the North-West Frontier Province.

	1901		
	No.	*Per 10,000*	*No. 1911*
Hindu	207,147,026	7,037	217,586,920
Bramanic *	207,050,557	7,034	217,337,902
Arya *	92,419	3	243,514
Brahmo *	4,050	0.14	5,504
Sikh	2,195,339	75.	3,014,466
Jain	1,334,148	45	1,248,182
Buddhist	9,476,759	322	10,721,449
Parsi	94,190	3	100,100
Mohammedan	62,458,077	2,122	66,623,412
Christian	2,923,241	99	3,876,196
Jewish	18,228	0.6	20,980
Animistic	8,584,148	292	10,295,168
Other and unspecified	129,900	4	37,108
Total	294,361,056	10,000	313,523,981

* Included in Hindu.

The distribution by religion in British India and the native States, respectively, in 1911, was as follows:

	Br. India	*Native States*	*Total*
Hindu	163,621,454	53,965,466	217,586,920
Bramanic *	163,381,250	53,956,652	217,337,902
Arya *	234,994	8,520	243,514
Brahmo *	5,210	294	5,504
Sikh	2,171,908	842,558	3,014,466
Jain	458,578	789,604	1,248,182
Buddhist	10,644,409	77,040	10,721,449
Parsi	86,155	13,945	100,100
Mohammedan	57,423,866	9,199,546	66,623,412
Christian	2,492,277	1,383,919	3,876,196
Jewish	18,524	2,456	20,980
Animistic	7,348,024	2,947,144	10,295,168
Other and unspecified	2,347	34,761	37,108
Total	244,267,542	69,256,439	313,523,981

* Included in Hindu.

The principal Christian sects in 1911 were: Roman Catholics, 1,490,864; Anglicans, 492,317; Romo-Syrians, 413,142; Baptists, 336,506; Jacobite Syrians, 225,190; Lutherans, 218,499; Presbyterians, 181,128; Methodists, 171,754; Congregationalists, 75,848; Reformed Syrians, 75,848; Salvationists, 52,407; Chaldæan Syrians, 18,780. Of the total number of Christians, 199,776 were recorded as European, 101,657 as Anglo-Indian (Eurasian), and 3,574,830 as native. Numerically the native Christian element is conspicuously strong in the South; in Madras 1,191,266 Christians were recorded, and in the Madras native States 1,154,209. Most of the Buddhists—10,384,579 in 1911—are in Burma.

Education. In respect of literacy, the 1901 census recorded 293,414,906 persons, of whom 14,154,602 males and 883,565 females were literate, 1,021,319 males and 103,912 females being literate in English. The number recorded by the 1911 census in respect of literacy was 313,415,389 (160,418,470 males and 152,996,919 females); literate males numbered 16,938,815, and literate females 1,600,763, 1,518,361 males and 152,026 females being literate in English. Notwithstanding the prevalence of illiteracy, education has made noticeable progress in recent years. Increased attention is being given by the Department of Education to primary, commercial, and technical instruction. In 1913, educational institutions numbered 181,659 (exclusive of those in British Baluchistan), with 7,173,000 scholars, including 1,008,000 females. About 70 per cent of the institutions are maintained by the State or aided by grants, the rest being private and unaided. Instruction in State institutions is secular. State expenditure on education in the year 1912–13, £6,055,000. There are universities at Calcutta, Bombay, Madras, Lahore (Punjab University), and Allahabad.

Agriculture. In British territory in 1912–13, the reported area cropped was 255 million acres, of which 9 per cent was under wheat, 31 per cent under rice, 39 per cent under other food grains and pulses, 6 per cent under oil seeds, and 7 per cent under cotton, jute, and other fibres. Sugar, tea, and tobacco are other important crops. Jute culture in recent years has been exceptionally profitable. The central and provincial agricultural departments, which have been developed since 1906, supply information on cultivation, crop prospects, etc., and distribute seeds.

In the year 1911–12, the area in British territory under food grains was 195,097,434 acres, of which rice 76,636,887, wheat 25,025,236, jawar 21,184,164, bajra 15,540,225, gram 13,946,210, barley 7,840,222, corn 6,311,627, and ragi 4,288,927; the area under oil seeds was 16,494,865 acres, cotton 14,568,189, sugar 2,565,770, and tea 543,565. Some of the more important estimated yields for 1911–12 (including the crops in certain of the native States) are: rice (cleaned), 521,992,000 hundredweight; wheat, 9,813,000 tons; tea (calendar year), 268,823,436 pounds; jute, 8,234,700 bales (of 400 pounds); cotton, 3,925,000 bales (of 400 pounds); rape and mustard, 1,271,000 tons; linseed, 641,200 tons; cane sugar, 2,390,400 tons.

For 1912–13 and 1913–14, area and production of important crops are reported as follows, in metric measure, with yield per hectare in 1912–13:

Hectares		*Quintals*		*Qs.*
1912-13	*1913-14*	*1912-13*	*1913-14*	*Ha.*
Wheat—				
11,947,772	11,208,422	98,708,966	85,622,281	8.3
Cotton—				
8,914,291	9,958,105	8,864,246	9,436,538	..
Rice—				
28,984,896	28,563,528	289,413,406	286,183,928	10.
Linseed—				
1,669,265	1,212,866	5,472,429	3,883,332	3.3

Minerals. In 1912 the coal output (which is chiefly in Bengal, and in Bihar and Orissa) amounted to 14,706,339 tons; in 1913, 16,208,000 tons. The output of crude petroleum (chiefly in Burma) increased from about 19,000,000 gallons in 1898 to over 249,000,000 in 1912, and about 278,000,000 in 1913. The annual salt production is nearly 1,500,000 tons. In 1912, the export of Indian manganese ore was about 708,000 tons, and in 1913 about 815,000 tons. About 15,000 tons of saltpetre are produced annually, and exported. In 1912 about 590,500 ounces of gold were produced (chiefly in Mysore), and in 1913 about 596,000 ounces. There is some production of mica, monazite, jade, and rubies.

Commerce. In the table below are given imports of private merchandise and treasure, government stores and treasure, and total imports; exports of foreign and domestic produce, government stores, and government and private treasure, and total exports—in thousands of pounds sterling for successive years—in the seaborne trade:

Imports:	*1910-11*	*1911-12*	*1912-13*	*1913-14*
Private mdse.	86,236	92,383	107,332	122,165
Gov't stores	2,901	3,654	3,754	5,373
Total mdse.	89,137	96,037	111,086	127,538
Private treasure....	26,445	35,615	34,132	24,414
Gov't treasure	46	32	7,089	4,546
Total treasure ..	26,491	35,647	41,221	28,960
Total imports ...	115,628	131,684	152,307	156,498
Exports:				
Indian produce....	137,081	147,879	160,899	162,819
Foreign produce ...	2,841	4,018	3,160	3,118
Gov't stores	58	96	86	85
Total mdse.	139,975	151,993	164,145	166,022
Private treasure ...	4,745	6,908	4,697	4,701
Gov't treasure	6	8	2,391	21
Total treasure ...	4,751	6,916	7,088	4,722
Total exports ...	144,726	158,909	171,233	170,744
Net imps. treas.....	21,740	28,731	34,133	24,238
Net exps. mdse. ...	50,838	55,956	53,059	38,484
Excess exports ..	29,098	27,225	18,926	14,246

In all directions imports in the year 1913–14 show a general increase, the only articles of importance declining being coal, raw silk and cotton, and silk piece goods. Imports of treasure have greatly declined Government stores imported are principally railway materials and army stores. Among the exports, raw cotton shows an increase of 45 per cent, and there are large increases in jute, tea, and seeds; while cereals, opium, and hides and skins have declined. Some of the principal articles for home consumption, and exports of Indian produce are shown in the table below, with values for 1913–14 in thousands of pounds sterling:

Imports	*1000 £*	*Exports*	*1000 £*
Cotton goods	41,423	Cotton	27,862
Cotton yarn	2,776	Jute	20,551
Iron and steel	10,668	Jute mfrs.	18,849
Sugar	9,971	Rice	17,756
Railway material	6,690	Seeds	17,116
Machinery, etc.	5,172	Tea	9,983
Copper	2,745	Wheat and flour	9,590
Mineral oil	2,744	Cottons	8,080
Hardware, etc.	2,682	Hides and skins	7,815
Woolen goods	2,568	Leather	2,833
Silk goods	2,068	Grain, etc.	2,767
Provisions	1,649	Opium	2,280
Liquors	1,491	Wool	1,670
Glass	1,297	Lac	1,311
Instruments, etc.	1,214	Coffee	1,024
Spices	1,155	Oilcake	920
Apparel	1,141	Manganese ore	809
Haberdashery, etc.	1,067	Wood, etc.	714
Paper, etc.	1,058	Dyes, etc.	694

Among the reëxports were cotton yarn and cloth, £1,040,000; raw wool, £331,000; metals, £148,000; sugar, £139,000.

Percentages of imports and exports of merchandise (private sea-borne trade) by countries in the year 1912–13: United Kingdom, 64.1 per cent of the imports and 23.7 per cent of the exports; Germany, 6.9 and 10.3; China, 0.9 and 2.3; Hongkong, 0.5 and 3.2; Japan, 2.6 and 9.2; France, 1.5 and 7.1; Belgium, 2.3 and 4.9; Java, 5.8 and 0.8; Straits Settlements, 1.9 and 2.8; Austria-Hungary, 2.3 and 3.9.

SHIPPING. In the foreign trade, vessels entered and cleared at ports in British India in the year 1913–14 numbered 8617, of 17,386,408 tons. Of this tonnage, about 53 per cent was from or to the United Kingdom and British possessions. About 75 per cent of the total trade of India was under the British flag. The chief ports are Calcutta and Bombay, which have about 70 per cent of the foreign trade. The other leading ports are Karachi, Rangoon, and Madras.

COMMUNICATIONS. On March 31, 1914, according to the Administration Report on the Railways of India there were open to traffic in British India and the native States 34,656 miles of State and privately owned railways, 1053 miles having been added during the fiscal year ended on that date. There were under construction 2443 miles. Of the mileage in operation, about 51 per cent was British standard gauge (5½ feet), and about 42 per cent meter gauge.

The year proved profitable for both State and private railways, with increased gross receipts and net earnings, but with a lower percentage of net earnings to capital outlay on the State railways due to increased interest charges. The net earnings for all railways for the fiscal year, 1913–14, were about £20,394,835 as compared with £20,309,078 in 1912–13. The capital on March 31, 1914, was £369,265,000. The net gain to the State in 1913–14 was £5,706,000, as compared with £5,739,000 in the preceding year. The total capital expenditure on railways in 1913–14 was £13,226,000.

The number of passengers carried during the year was 457,717,900, and the passenger revenue was about £14,137,643, of which £12,221,637 was from third-class traffic. The average rate for all classes of passengers was slightly over 4 mills per mile, and the average distance traveled was 36.6 miles, not having been materially changed since 1884.

The amount of goods carried on the railways during the year was 83,000,000 tons. This freight traffic was an increase in the tonnage carried, but there was not a corresponding increase in the earnings, due to the decrease in the average distance each ton of freight was carried. This change was caused by the failure of crops in the united provinces and some parts of Bengal, and increased exports of grain to Europe.

During the year sanction was accorded for a survey by the Bengal-Nagpur Railway for a line 66 miles long between Gopalpur and Russelkonda. Another survey that was made during the year was that in connection with the Indo-Burma connection railway, where three possible routes were being considered, the coast route, the Manipur route, and the Yukon Valley route. A reason given for this work was that Burma was cut off from the rest of the Indian Empire during the activity of the German cruiser, *Emden*.

The Great Indian Peninsula Railway during 1914 was constructing the tunnel in the Western Ghats, 1507 feet in length, about 100 miles from Bombay, and on July 8, 1914, the headings met and the completion of the work, which had been under way since 1913, was promised for 1915.

On September 1, 1914, the East Indian Railway had 26,192 freight cars running on its system, an increase of 26 per cent over April 1, 1913, and under normal conditions this number would have increased to 33,304 by April 1, 1915. Over 1700 trucks a day were required by the Bengal coal fields.

On March 31, 1913, there were 311,000 miles of telegraph wire; the capital cost of the telegraphs to that date was £7,865,000. Post offices on March 31, 1912, numbered 18,801. At the end of the fiscal year 1914, the postal and telegraph services of British India were amalgamated.

FINANCE. The British sovereign (par value $4.86656) is the standard coin, but the current coin is the rupee (par value 32.444 cents), 15 rupees to the pound sterling. For British India, the gross revenue and the expenditure charged to revenue, in thousands of pounds sterling, were as follows for financial years (revised estimates for 1913–14):

	1900-1	*1905-6*	*1908-9*	*1911-12*	*1912-13*	*1913-14*
Rev.	64,724	70,842	69,762	82,835	86,863	84,485
Exp.	63,054	68,750	73,499	78,895	83,755	82,998

In the table below are shown the principal sources of gross revenue for fiscal years in thousands of pounds sterling (revised estimates for 1913–14):

	1908-9	*1911-12*	*1912-13*	*1913-14*
Land revenue	19,759	20,765	21,283	21,251
Opium	5,885	5,961	5,125	1,638
Salt	3,276	3,391	3,334	3,420
Stamps	4,344	4,815	5,069	5,227
Excise	6,390	7,610	8,278	8,890
Provincial rates	584	548	552	180
Customs	4,882	6,469	7,197	7,368
Income tax	1,558	1,653	1,742	1,914
Forest	1,701	1,952	2,153	2,320
Registration	431	446	482	509
Tribute (native sts.)	590	595	624	628
Total	49,295	54,205	55,839	53,255
Interest	987	1,449	1,474	1,377
Post office	1,826	2,184	2,263	2,401
Telegraphs	978	1,087	1,174	1,178
Mint	108	367	487	405

	1908-9	*1911-12*	*1912-13*	*1913-14*
Civil depts.	14,489	16,466	16,689	18,015
Miscellaneous	....	818	765	743
Railways (net)	9,958	15,892	17,372	17,519
Irrigation	3,558	3,980	4,411	4,553
Other civil pub. works	1,146	827	355	280
Military depts.	1,048	1,343	1,388	1,880
Grand total	69,762	82,885	86,868	84,485

In the table below are shown the principal items of gross expenditure charged against revenue for fiscal years (revised estimates for 1913–14), in thousands of pounds sterling; the first item, direct demands on the revenue, includes refunds and drawbacks, assignments and compensations, together with collection charges, which comprehend land revenues, excise, customs, etc., with production costs in the salt and opium monopolies:

	1908-9	*1911-12*	*1912-13*	*1913-14*
Direct demands	8,742	8,670	8,658	9,355
Interest	1,967	2,038	1,811	1,554
Post office	1,897	2,008	2,027	2,109
Telegraphs	1,028	1,094	1,106	1,183
Mint	192	117	142	137
Civil depts.	1,146	1,288	1,335	1,394
Misc. civil charges	4,910	4,899	4,926	5,400
Famine relief *	1,645	1,000	1,000	1,000
Railway account †	11,200	12,104	12,568	12,870
Irrigation	2,949	3,175	3,302	3,546
Other public works	4,496	5,454	6,064	7,032
Army and marine	20,651	20,902	20,953	21,399
Total‡	73,499	78,895	83,755	82,998

* Including insurance. † Railway revenue account; the working expenses are treated as deduction from revenue instead of as expenditure. ‡ These totals are adjusted to compensate for net excess on provincial allotments amounting to £667,000 in 1908-9, £969,000 in 1911-12, £4,514,000 in 1912-13, and a net deficit of £602,000 in 1913-14.

Besides expenditure charged to revenue there is an additional expenditure on railways (£8,813,000 in 1912–13), on irrigation works (£1,408,000), and in connection with the new capital at Delhi (£115,000); these items are charged against capital.

In the table below are shown net revenue and expenditure from which departmental receipts, interest charges, and working expenses of railways and irrigation works, refunds and assignments, cost of cultivating and manufacturing opium, etc., have been deducted. The figures for 1913–14 are revised estimates.

Revenue	*1911-12*	*1912-13*	*1913-14*
Land revenue	£20,000,000	£20,519,000	£20,470,000
Opium export	5,228,000	4,516,000	562,000
Taxation	24,351,000	26,099,000	26,928,000
Commercial enterprises	6,658,000	8,363,000	8,153,000
Tribute	394,000	419,000	424,000
Mint & exchange	356,000	446,000	382,000
Total	£56,987,000	£60,362,000	£56,919,000
Expenditure:			
Collection	£ 6,384,000	£ 6,514,000	£ 6,694,000
Debt	589,000	337,000	177,000
Military services	19,559,000	19,565,000	20,019,000
Civil services	24,546,000	25,324,000	28,144,000
Famine relief	1,000,000	1,000,000	1,000,000
Total	£53,047,000	£57,254,000	£55,482,000

There was a surplus of net revenue over net expenditure in 1911–12 of £3,940,000; 1912–13, £3,108,000; 1913–14, £1,437,000.

The debt stood March 31, 1914, at £274,525,000, detailed as follows: £177,398,000 sterling debt, and £97,127,000 rupee debt (converted into sterling at 1*s.* 4*d.* the rupee). Miscellaneous obligations, including savings-bank balances, amounted to about £32,927,000, besides the annual charge for railway annuities of £899,000. Railway construction outlay reached £153,859,000 by March 31, 1914, and irrigation construction £39,447,000. Cost of purchase of nine railways from private companies, £108,092,000; loans to native States, £11,550,000 (net); advances to railway companies, £8,555,000. Gold standard reserve, £25,510,000; cash balances in England, £8,133,000, and in India, £15,627,000. A loan of £2,000,000 at 3½ per cent was raised in India in 1912–13.

Army. In India there is maintained a headquarters staff of the Imperial army with Gen. Sir Beauchamp Duff as commander-in-chief, with a general staff branch which includes branches of the adjutant-general department, quartermaster-general's department, a medical branch, ordnance branch, and a military works branch. The forces are divided into two armies, a northern army under command of Lieut.-Gen. Sir. J. Willcocks, with headquarters at Murre, and a southern army with headquarters at Ootacamund, with Lieut. Sir J. E. Nixon in command. These armies were made up both of British and native troops, and their strength was as follows:

	Northern Army		*Southern Army*		*Total*	
British Army						
Royal Artillery	7,973		7,796		15,769	
Cavalry	3,756		1,878		5,634	
Royal Engineers	213		111		324	
Infantry	28,948		24,798		53,746	
Indian Army, etc.	72		30		102	
	40,962		34,613		75,575	
	British	*Indian*	*British*	*Indian*	*British*	*Indian*
Indian Army						
Artillery	57	6,440	11	3,603	68	10,043
Cavalry	372	15,440	211	8,810	583	24,250
Infantry	1,095	65,688	930	54,304	2,025	119,992
Sappers, Miners, etc.	167	2,251	269	3,325	436	5,576
	1,691	89,819	1,421	70,042	3,112	159,861
Imperial Service Troops (Indian)	9,077		11,992		21,069	
Indian Reservists	22,743		13,381		36,124	
Volunteers, British, including Anglo-Indians	18,617		20,853		39,470	

The artillery in India had been increased and ordinary works had been erected, while a central flying school was established at Sitapur and a General Staff college is maintained at Quetta. Additions to the soldiers' pay and enlarged expenditures for various military purposes have brought up the cost of the military establishment in India, but it was not considered possible that any relief could be secured for existing conditions. At the outbreak of the European War of 1914 material changes in the distribution of the troops in India took place. A certain number of native troops were sent to Europe; they were landed in Southern France, and from there were sent forward to the front. Details as to the organization and changes naturally were unavailable at the end of the year.

Government. The King of Great Britain and Ireland is Emperor of India. In England, the administration of Indian affairs is intrusted to the Secretary of State for India (a member of the British cabinet), who is assisted by a council. The expenditure of Indian revenues is determined by the Secretary of State in council. The Secretary of State for India in 1912 was the

Marquis of Crewe (from November, 1910). In India the executive power resides in the "Government of India," that is, the Governor-General in council. In 1912 the Governor-General, who is appointed by the crown for five years, was Baron Hardinge of Penshurst, who succeeded the Earl of Minto in 1910. The council consists of six members, appointed by the crown, and of the commander-in-chief of the army in India. The Governor-General's legislative council, in addition to ex-officio members, consists of 28 official and 32 nonofficial members (including 27 elected). There are similar legislative councils in Madras, Bombay, Bengal, Bihar and Orissa, the United Provinces, the Punjab, Burma, the Central Provinces and Berar, and Assam. British India is divided into 15 local governments and administrations, viz.: under governors, the presidencies of Madras, Bombay, and Bengal; under lieutenant-governors, the provinces of Bihar and Orissa, the Punjab, the United Provinces of Agra and Oudh, and Burma; under chief commissioners, the Central Provinces and Berar, Assam, Ajmer-Merwara, Coorg, British Baluchistan, the North-West Frontier Province, Delhi, and the Andamans and Nicobars.

The native States are governed by their princes, ministers, or councils, but the government of India, through British residents or agents, exercises control in varying degrees, and does not permit the States to maintain external relations.

The Secretary of State for India is the head of the Indian administration in England, responsible to Parliament; he is a member of the cabinet, and in matters of foreign policy and native affairs can act on his own authority without consulting his council. Subject to his direction, the Governor-General in council is supreme in both civil and military affairs.

HISTORY

INDIA AND "BRITISH CITIZENSHIP." One of the most difficult problems confronting the British administration in India was propounded in December, 1913, when the National Congress (or rather the congress of Nationalists) and the Moslem League both demanded a clearer definition of the rights of Indians as "citizens of the British Empire." Fundamentally the question involved was the right of the British to rule India, for when one begins to ask whether Gurkhas and Sikhs have not rights as citizens of the British Empire, it is very easy to go a step further and ask whether Gurkhas and Sikhs and the other natives of India have not the right to govern themselves, as much as the inhabitants of Australia or Scotland. The particular grievance which gave rise to the controversy was the manifest determination of the British self-governing colonies to impose humiliating restrictions upon immigrants coming from India as undesirable "Asiatics." The Indians, on the other hand, claimed that as citizens of the British Empire they possessed the privilege of settling freely in any portion of the Empire; and especially they resented the manner in which Canada and South Africa discriminated against Indian immigration. In another place (see the article SOUTH AFRICA, section *The Settlement of the Indian Question*) we have recounted the events which led the South African government to remove the most irritating of the Indian grievances. We have also given an account of the uncompromising resistance encountered by the shipload of Sikhs who sailed to Canada on the *Komagata Maru* hoping to gain entrance into that Dominion (see article CANADA, section *The Komagata Maru*). Late in July the *Komagata Maru* began her return voyage to India with her cargo of angry Indians, and in October reports were received that when the ship arrived at Bajbaj (India) the pent-up indignation of the passengers found vent in a violent riot, which resulted in almost a score of fatalities. The adventure of the *Komagata Maru* had established the fact that Canada was unyielding and vindicated the right, or at least proved the power, of the self-governing colonies to exclude Indian immigrants.

REFORM PROJECTS. Meanwhile well-educated young Nationalists continued to foment discontent in India; the police persevered in their rather futile efforts to bring to justice the agitators who were supposed to be conspiring against the government; it was found necessary to throttle the press by introducing in March a new press law which made it an offense under the Penal Code to comment subversively upon judicial investigations and trials before their conclusion; and almost every phase of the British rule in India was touched by criticism or by projects of reform. Lord Crewe, the Secretary of State for India, sponsored a bill in the Westminster Parliament with the object of converting his present advisory council into a smaller, better paid, executive, council; but the House of Lords, acting under the influence of Lord Curzon, rejected the bill, probably feeling that if the council were made more effective and if its members became practically heads of departments, it would be able even more than at present to exercise unwarranted and unwise interference in matters which should be left to the discretion of the Governor-General. In this connection it is interesting to note the criticisms which have of late been directed against the financial administration of the council. The council, as the supreme authority in London on Indian affairs, controlled enormous sums deposited in London by the government of India; and it was frequently alleged that not only did the council pursue policies disadvantageous to India, but that it manipulated these enormous sums for the advantage of certain London bankers. It was pointed out that in 1909 seven leading London banks enjoyed the use of £7,500,000 as deposits without security, of which sum over half was deposited in the three banks whose directors were connected with the India Office Finance Committee. All such charges of favoritism, however, were denied early in 1914 by the report of the Royal Commission on Indian Currency and Finance. In fact, the Commission appeared to be more energetic in repelling criticism than in performing the main task assigned to it, namely, the elaboration of a scheme to place India's currency on a more satisfactory basis; for in regard to the establishment of a gold mint for India the commission expressed an exasperatingly noncommittal judgment, and contented itself with suggesting that the paper currency might be made more elastic by loaning out some of the Paper Currency Reserve to banks on security.

In India the year was characterized by the diffident attitude of the government to a number of proposed reforms. In The Imperial Legislative Council the Hon. Raja Kushal Pal Singh attempted in vain to secure the exemption of improvements on land from the assessments of the land tax. Again, it was proposed by a non-official member of the Legislative Council that permanent conciliation boards be appointed to settle the numerous violent disputes which arise between Hindus and Mohammedans concerning religious processions; but the government considered that the various practical difficulties of such a plan would be too great at present. With the hope of securing the more effective protection of religious endowments against maladministration, a conference was convened in March, 1914; reports were not at hand, however, with regard to the results of the conference. Recent estimates and reports on the great reform which was undertaken in 1911, the removal of the government headquarters to Delhi, placed the cost of the work at £6,000,000, distributed over the eight years 1912–20, exclusive of military accommodation, railway construction, and the improvement of sanitary conditions in the old city of Delhi. One other event, although not of general significance, received such widespread and sympathetic attention in India that it deserves mention here: the death of Lady Hardinge, wife of the Viceroy.

India and the War. When the British Empire engaged in the great war against Germany (Aug. 4, 1914), and especially when the Turkish Sultan came to the support of Germany in the tremendous struggle, thoughtful observers turned their eyes toward India with unusual eagerness. For, it was assumed, the Mohammedans of India would not remain quiet while their brother-Mohammedans were fighting in a "holy war"; nor would the other Indians, of whatever religion, ignore the opportunity to cast off the British yoke while Great Britain was being harassed. Prophecies were current that, profiting by England's embarrassment, the embers of smoldering rebellion in India would flare forth into full blaze. If such an insurrection was destined to occur, it certainly was not immediately apparent. The masses were too inert, and the princes too conscious of the advantages of British rule. The Viceroy was able with confidence to assert that a large force would be dispatched from India to aid England. Such forces were actually sent, some to Egypt, where their presence tended to stimulate the faltering loyalty of the Egyptians, some to the Persian Gulf, and presently report was received that Indian troops, native-Indian as well as British-Indian, were fighting side by side with British troops in Europe. Meanwhile in India the native princes were coming forward with expressions of loyalty, and offering to help in the war. The Maharaja of Mysore offered 50 lakhs of rupees (over $1,500,000) and placed all his troops at the disposal of the Empire. On September 8 the Viceroy telegraphed to the Secretary of State that many generous offers were being received from most of the 700 native princes, not a few of whom had volunteered for active service: among them the septuagenarian Sir Pertab Singh, the chiefs of Jodhpur, Bikanir, Kishangarh, Rutlam, Sachim, and Patiala. A camel corps was furnished by Bikanir. Most significant of all were the expressions of loyalty on the part of Indian Moslems; for it might have been expected that they would embrace the cause of the Turks. But Moslem associations throughout India, and the Aga Khan himself, zealously promised to support the British Empire. As in all countries, the war produced a serious business depression; but there seemed to be no imminent danger of India's being more seriously injured by the struggle; and no real alarm was caused by the spectacular exploits of the German cruiser *Emden*, which sank several British steamers in the bay of Bengal, temporarily paralyzed the trade of Calcutta, and dropped a few shells on the oil-tanks at Madras.

INDIANA. **Population.** The estimated population of the State on July 1, 1914, was 2,779,467. The population in 1910 was 2,700,876.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	4,949,000	168,817,000	$94,724,000
	1913	4,900,000	176,400,000	105,840,000
Wheat	1914	2,485,000	48,289,000	44,586,000
	1913	2,150,000	89,775,000	85,002,000
Oats	1914	1,575,000	44,888,000	19,802,000
	1913	1,700,000	86,880,000	18,824,000
Rye	1914	99,000	1,614,000	1,872,000
	1913	108,000	1,566,000	971,000
Barley	1914	8,000	200,000	184,000
	1913	8,000	200,000	100,000
Rice	1914	....	....	....
	1913	....	....	....
Potatoes	1914	75,000	6,000,000	8,360,000
	1913	75,000	8,975,000	8,889,000
Hay	1914	1,764,000	*a* 1,764,000	24,872,000
	1913	1,800,000	1,800,000	25,880,000
Tobacco	1914	18,500	*b* 12,150,000	1,094,000
	1913	15,900	11,925,000	1,812,000
Cotton	1914	....	....	....
	1913	....	....	....

a Tons. *b* Pounds.

Mineral Production. The principal mineral products of the State are coal, clay wares, cement, and stone. The aggregate value of these four substances in 1913 exceeded 90 per cent of the total value of the output of the mines and quarries. In 1913 the total value of the mineral production was $46,607,864. Of this total the coal mines contributed $19,001,881, the Portland cement plants $10,218,867, the clay products $8,498,646, and the stone quarries $4,676,689. In 1912 the mineral output of the State was valued at $42,239,193, compared with which the production in 1913 shows an increase of $4,368,671, or over 10 per cent. These values do not include that of the pig iron produced in the State, which in 1912 exceeded $17,000,000 and in 1913 was over $20,600,000, nor do they include the value of the coke produced, which in 1913 amounted to nearly $13,200,000. These two items make the total value over $80,000,000. In the production of coal, which is the principal mineral product, Indiana ranks seventh, with an output in 1913 amounting to 17,165,671 short tons, valued at $19,001,881, compared with 15,285,718 short tons, valued at $17,480,546 in 1912. The coal production in 1914 was practically the same as that of 1913, although the production after the 1st of October decreased about 10 per cent, compared with the same period in 1913. The manufacture of Portland cement is the second among the activities in mineral production in the State. There were made in 1913, 10,219,492 barrels, valued at $10,218,867, compared with 9,634,582 barrels, valued at $7,237,591 in 1912. The value of clay products, which ranked third in value, was in 1913

$8,498,646. Since the completion of its plant of 560 retort ovens at Gary by the United States Steel Corporation, Indiana has assumed importance as a manufacturer of coke and has advanced from seventeenth place in 1910 to third in 1913. The production of coke in the latter year amounted to 2,727,025 short tons, valued at $13,182,136. The value of the natural gas produced in the State decreased from $1,014,295 in 1912 to $948,278 in 1913. The production of petroleum decreased from 970,009 barrels in 1912 to 956,095 barrels in 1913. The value, however, increased from $885,975 in 1912, to $1,279,226 in 1913. Other important products are sand and gravel, lime, mineral waters, pyrite, sand-lime brick, and sulphuric acid.

EDUCATION. The total school population of the State in 1914 was 766,383. The enrollment in the public schools in the same year was 548,497 and the average daily attendance was 441,168. The teachers, both male and female, numbered 18,449, receiving an average yearly salary of $593.70. The Legislature of 1913 enacted three measures which will have an important effect on the schools of the State. The first of these laws was the vocational education law, under which there were established in 1913, 13 classified State-aided vocational schools in 13 cities and towns of the State. They are classified as full-time day schools, part-time coöperative schools, evening trade schools for boys and girls, evening trade extension schools for men and women, and home-making schools for girls. The second measure was the high school inspector law, which is designed to provide a single standard for high school inspection, and has already accomplished satisfactory results. The third law passed was an attendance law, which requires that all children between the ages of 7 and 14 must attend school, and that all children must attend school until they have reached the age of 16 if they have not completed the fifth year's work or its equivalent; the law further provides that all children between the ages of 14 and 16 must either attend school or be employed in a gainful occupation. Great benefit has already been derived from the operation of this law which coöperates well with the vocational education law. The same Legislature passed a measure establishing a township high school.

TRANSPORTATION. The total mileage of railways of the State on Jan. 1, 1913, was 7359, and of this, 4688 were main lines. There were on that date 45 companies operating or leasing electric railways in the State.

FINANCE. The report of the Treasurer for the fiscal year 1914 showed a balance in the Treasury on Dec. 30, 1913, of $378,271. The receipts for the period amounted to $12,544,007, and the disbursements were $12,272,314. There was a balance on Dec. 30, 1914, of $649,964. The total State debt at the end of the fiscal year was $1,425,163. Of this, $1,289,548 was domestic debt, and $135,615 was foreign debt.

CHARITIES AND CORRECTIONS. There were in 1914, 17 charitable, educational, and correctional institutions under the supervision of the Board of State Charities. These institutions included the Central Hospital for the Insane at Indianapolis; the Eastern Hospital for the Insane at Richmond; the Northern Hospital for the Insane at Logansport; the Southeastern Hospital for the Insane at Evansville; the Soldiers' Home at Lafayette; the School for Feeble-minded Youth at Fort Wayne; the Village for Epileptics at New Castle; the School for the Deaf, and the School for the Blind at Indianapolis; the State Prison at Michigan City; the State Reformatory at Jeffersonville; the Indiana Girls School at Clermont; and the Indiana Boys School at Plainfield. In these institutions there were during the fiscal year ending Sept. 30, 1913, 13,488 inmates. For their support there was drawn from the State treasury $2,318,347. There were in addition extraordinary expenses amounting to $316,443.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914 as the sessions are biennial and the last one was held in 1913. There was an election for Congressmen and State officers, except Governor and Lieutenant-Governor, and the expiration of the term of Senator Shively in 1915 made it necessary to elect his successor. Elections were also held for members of the Legislature. The Democratic State Convention was held in March. The most important plank adopted related to a State-wide primary law. Senator Kern brought to the convention letters from President Wilson and from Secretary Bryan, favoring such a law. After a protracted discussion a State-wide primary plank was reported and was adopted by unanimous vote. In addresses made by the temporary chairman, Governor Ralston, and others, the President and his policies were commended. The nomination of Senator Shively for another term was ordered by the convention. At the Progressive State Convention held in April, Albert J. Beveridge, former United States Senator, was nominated for the Senate. In the platform adopted by the convention the party pledged itself to work for the elimination of saloons and breweries in the State. It pronounced for equal suffrage for women, for a State-wide primary law, for the initiative, referendum, and recall for all elective and judicial officers, for the short ballot, for the prohibition of injunctions in labor disputes, for a minimum wage for women, and for free public school textbooks. The Republicans in their State Convention nominated Hugh T. Miller, former Lieutenant-Governor, for the Senate. The platform adopted declared that the new tariff law greatly depressed business without reducing the cost of living; disapproved of the administration's Mexican policy; and favored arbitration of labor disputes. In the elections on November 3, Cook, Democrat, for Secretary of State, received 262,703; Jackson, Republican, 233,213; and Pierson, Progressive, 93,683. Senator Shively was reelected by a vote of 272,249, compared with 226,766 for Miller, the Republican candidate, and 108,581 for Beveridge, Progressive candidate. The total vote cast by all parties for Senator was 646,059, compared with a presidential vote of 654,474 in 1912. The Democratic vote showed a decrease of about 10,000; the Republican a gain of about 75,000; and the Progressives a loss of about 55,000. The Democrats elected 11 representatives to Congress and the Republicans 2, a Democratic loss of 2 Congressmen. The Democrats elected a majority in each branch of the Legislature.

FRAUDS AND INDICTMENTS. Following the election there were charges of fraud in Vigo and other counties. As a result of investigations the mayor of Terre Haute, Donn M. Roberts (who had announced himself as a candidate for Governor in 1916), was arrested, together with two judges, the chief of police, the sheriff, and several other city Democratic officials, and nearly 100 citizens. Those arrested included members of all parties, but all belonged to the Roberts local machine which was charged with bipartisan corruption in several counties. Forty-six of the men arrested turned State's evidence, and later 81 plead guilty, 8 not guilty, and 26 filed demurrers. The direct acts leading to the indictments were frauds at the registration a few weeks prior to the election of November 3, and at the election itself. Indictments were drawn by the Federal authorities because a member of Congress from the fifth district and a United States Senator were chosen at the election. It was charged against Mayor Roberts that he levied assessments against proprietors of gambling houses, saloons, and dance halls, the proceeds of which were to be used for the registration of voters for the election. He plead not guilty and declared that he would stand trial. Charges of fraud at the elections were also made in Marion, Vanderburg, and Lake counties (Indianapolis, Evansville, and the Gary district). These charges were taken before the United States grand jury. An incident of the fall election was the defeat of the proposed constitutional convention to restate the State's fundamental laws.

In the summer of 1914 it was discovered that certain bills before the Legislature in 1913 had been signed by the Governor under a misrepresentation. These bills had been passed in one house of the Legislature and defeated in another but had been presented to the Governor as having been duly passed in both houses. He demanded an investigation which was made by the Marion County grand jury. No indictments were found involving these transactions but the grand jury in the course of its investigation indicted the Lieutenant-Governor, the Speaker of the House (then a candidate for Secretary of State), and 11 other prominent politicians. The charge was that these men had unlawfully increased the number and pay of legislative employees. The defendants demanded immediate trial and the case was heard on an agreed statement of facts by the Marion Criminal Court. The defendants were all acquitted on the theory that there was no intention to defraud, no personal gain, and that at any rate no Legislature is bound by the act of its predecessor in fixing the number and pay of legislative employees.

STATE OFFICERS, 1915. Governor, Samuel M. Ralston; Lieutenant-Governor, Wm. P. O'Neill; Secretary of State, Homer L. Cook; Treasurer, Geo. F. Bittler; Auditor, Dale Crittenberger; Attorney-General, —— ————; Superintendent of Education, Chas. A. Greathouse—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, Richard K. Erwin; Associate Justices, Moses B. Lairy, John W. Spencer, Douglas Morris, and Charles E. Cox; Clerk of the Court, J. Fred France—all Democrats.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	41	60	101
Republicans	8	39	47
Progressives	1	1	2
Democratic majority	32	20	52

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

INDIANA UNIVERSITY. A State institution for higher education, founded in 1820, at Bloomington, Ind. The students enrolled in the autumn of 1914 numbered 1468, and the faculty were 113. There were no notable changes in the faculty during the year and no noteworthy benefactions were received. The annual income amounts to about $744,000, of which the greater part is received from the State. The library contains about 100,000 volumes. The president is William L. Bryan, Ph.D., LL.D.

INDIANS. Perhaps the most interesting event in connection with the history of the Indian tribes in 1914, was the practical extinguishment of the tribal form of government of the Cherokees, one of the Five Civilized Tribes. The tribal form of government was abolished at the close of the fiscal year as the result of the final completion of the technicalities necessary to admit this tribe of Indians to citizenship in Oklahoma. The work of equalizing the allotments of the other tribes, the Choctaw, Chickasaw, Seminole, and Creek nations, was carried on and will probably be completed within a few years.

There were on the Indian reservations in 1913, 217 day schools which are conducted similarly to the public schools in the several States. There are in addition large nonreservation schools at Carlisle, Pa., Lawrence, Kan., Chilicco, Okla., Riverside, Cal., Phœnix, Ariz., and Salem, Ore. The total enrollment of Indians in all the schools in 1914 was 57,898. At the close of the fiscal year there were 50 hospitals, with a combined capacity of 1400 patients, and six other hospitals under construction. Plans are being completed for the construction of seven new hospitals at a cost of from $12,000,000 to $15,000,000 each, but even these facilities will be hardly adequate for a population of over 300,000 persons with a high percentage of tuberculosis and trachoma.

The industrial welfare of the Indians received careful attention in 1914. The Navajo blanket industry furnishes to this tribe an annual income of $600,000, and basketry and lace-making are industries promising remunerative employment to Indian women. At 56 different reservations there are 62 principal irrigation projects or systems, covering an area of 900,000 acres, which are capable of making farms of 20 acres each for 45,000 Indians, with an estimated value of $72,000,000. For these projects there has been expended $8,500,000, and they will require for completion a further expenditure of $13,000,000. The irrigable lands belonging to the Indians form one of the principal sources of wealth for these people and also form probably the best opportunity for them to be individually self-supporting. Nearly 100,000 acres of Indian lands were sold during the year for a consideration of $1,652,815. This money is in large part used by the Indians in improving their retained lands, but in the case of the old and feeble, it is paid to them as their needs require.

INDIA RUBBER. See RUBBER.

INDO-CHINA. See FRENCH INDO-CHINA.

INDUSTRIAL ACCIDENTS. See WORKMEN'S COMPENSATION, and LABOR LEGISLATION.

INDUSTRIAL DISEASES. See OCCUPATIONAL DISEASES.

INDUSTRIAL FINANCE CORPORATION. See BANKS AND BANKING.

INDUSTRIAL INSURANCE. See SOCIAL INSURANCE.

INDUSTRIAL RELATIONS COMMISSION. This commission was created by Congress in August, 1912. On June 26, 1913, President Wilson named the following to constitute the Commission; they were later confirmed and organized in October, 1913: Representing the public: Frank P. Walsh, chairman, attorney for the Board of Public Welfare, Kansas City, Mo.; Prof. John R. Commons, economist, of the University of Wisconsin; and Mrs. J. Borden Harriman of New York City, member of the National Civic Federation; representing employers: Frederick A. Delano, Chicago, railway manager; Harris Weinstock, San Francisco, merchant and publicist; and S. Thurston Ballard, Louisville, Ky., manufacturer; and representing organized labor: John B. Lennon, Philadelphia, treasurer of the American Federation of Labor; Charles O'Connell, District of Columbia, head of the National Trades Department of the same Federation; and Austin B. Garretson, Cedar Rapids, Iowa, president of the Order of Railroad Conductors. The commission had resulted from a movement by various social workers and economists, instigated by the great industrial unrest manifested by the Lawrence and other strikes and the notorious dynamite cases, in order to determine the causes of this widespread dissatisfaction among the working population and the means of harmonizing conflicting interests. A total appropriation of $300,000 was made for the commission, of which $100,000 was available during the first year. An effort was made in the Senate in July, 1914, to cut the remaining $200,000 to $50,000, but failed.

The commission planned to investigate public agencies related to the labor problem, trade disputes, unorganized labor and its problems, and legal aspects of industrial relations. During the summer Dr. Charles McCarthy, former legislative reference librarian of Wisconsin, was made director of the investigational work. Public hearings were begun in April, 1914, and continued until September, during which the commission heard witnesses in Washington, New York, Paterson, Philadelphia, Chicago, Lead, S. Dak., Butte, Portland, Seattle, San Francisco, and Los Angeles. During this time there testified witnesses representing 319 organizations, firms, and corporations as follows: labor organizations, 82; employers' associations, 36; firms and corporations, 113; civic organizations, 38; public institutions, 50. Such problems as industrial arbitration, unionism, open or closed shop, minimum wage, unemployment in its various phases, efficiency, and the conditions of labor in various trades were discussed from the standpoints of laborers and employers.

The preliminary report of the commission to Congress was given out on December 7. The underlying causes of dissatisfaction were analyzed under three heads. Those most frequently advanced were: world-wide and laudable desire for better living conditions; protest against low wages, long hours, and improper working conditions; desire of workers for a voice in fixing conditions of labor; unemployment and insecurity of positions; misunderstanding and prejudice; agitation and agitators; rise of prices; and a rapidly growing feeling that redress for injustice and exploitation cannot be secured through existing governmental institutions. Among the causes of unrest advanced by employers were: normal desire for better living conditions; misunderstanding and prejudice; agitators; unemployment; unreasonable demands due to strength of organization; inefficiency of workers; rapidly increasing complexity of industry; sudden great freedom of immigrants accustomed to repression; craze to get rich quick; decay of old ideas of honesty and thrift; misinformation in newspapers; too many organizations for combat and not enough for coöperation; violence; sympathetic strikes; boycotting; meddlesome and burdensome legislation; the closed shop; and financial irresponsibility of labor unions. Causes advanced by employees included many of the foregoing and in addition the following: demand for industrial democracy; unjust distribution of product of industry; unfair attitude of the courts, one law for rich and another for poor; immigration and consequent oversupply of labor; the double social standard sanctioning low wages for hardest labor, but luxury for many performing no useful service; disregard of grievances by employers; control of industry by large corporations; lack of proper training; unfair competition from prison and other exploited labor; the rapid pace, resulting in accidents and premature old age; inattention to sickness and accidents; arbitrary discharge of employees; blacklisting; exploitation of women and children in industry; promotion of violence by hireling gunmen and spies; monopolization of land and natural resources; and suppression of free speech and right of peaceful assembly.

The commission stated that the majority of labor representatives considered the most important or indeed the only real remedy for the industrial situation to be the extension of labor organization. It therefore made a tabulation of the principal criticisms of existing trade unions as advanced by the employers on one hand and by the radical Socialists and Syndicalists on the other. Among the criticisms advanced by employers were: lack of responsibility; the closed shop with its labor monopoly and interference with efficiency; restriction of output, while insisting on a standard wage for output below standard; the uniform wage for all regardless of efficiency; arbitrary restrictions on apprentices; the use of violence; the power of union officials which is abused by blackmailers and grafters; the undermining of shop discipline; unreasonable demands and union rules; unreasonable jurisdictional disputes; ruthless and illegal use of the sympathetic strike. Criticisms of trade unions advanced by the radicals included the following: organization by crafts and consequent destruction of the solidarity of labor; acceptance of the doctrine that the interests of employers and of labor are the same; lack of democracy and domination by leaders; monopolization of labor power by skilled workers; neglect of the political field; restrictions on members. To each of these numerous criticisms trade unionists made replies. On the other hand trade unionist witnesses advanced numerous criticisms of employers' associations. These were accused of denying or attempting to prevent labor organization; of maintaining an attitude of bitterness and hatred; of being dominated by small cliques; of being ignorant of, and indifferent to, conditions of labor; of using blacklists and boycotts; of employing armed guards and gunmen to maintain a state of feudalism and to provoke violence; of maintaining detectives and spies to harass unionists and provoke strikes; of maintaining strike-breakers; of being insincere in their advocacy of the open shop; of using their financial power to compel the support of outsiders and to corrupt the sources of public information; of exercising undue influence over courts and other public officials; of bribing union officials; of opposing humane and necessary legislation; of being unincorporated and financially irresponsible.

The report declared that there was almost uniform condemnation of compulsory arbitration, but general approval of mediation in industrial disputes. The formation of a Federal commission of mediation to be composed of representatives of employers and employees was almost unanimously approved. Such a commission could exercise only voluntary services and would coöperate with State boards of mediation whenever possible. With equal unanimity a national system of labor exchanges covering the entire country and supervised by a central bureau at Washington was approved.

In December it was announced that the Industrial Relations Commission would undertake an investigation of the great charity trusts, including the Rockefeller Foundation, the Russell Sage Foundation, the Baron de Hirsch Fund, the Cleveland Foundation, and the various Carnegie benevolences. The commission declared it would inquire into the rights, powers, and functions of these endowments, the extent to which their charters may be stretched, and their attitude toward industrial questions. It would inquire how the policies of these organizations are shaped.

INDUSTRIAL WORKERS OF THE WORLD. The I. W. W. which has come into prominence during the last few years is a radical labor organization which had its inception in the Colorado strike of 1903. Actual organization came about early in 1905 through the combination of the Western Federation of Miners, the United Metal Workers, and the Labor Alliance. Soon after, the Western Federation of Miners and some Socialists withdrew and three years later a split occurred, resulting in the establishment of two branches with headquarters at Chicago and Detroit, the former the more revolutionary in its attitude. It favors direct action, opposes the conventional trade unionism, preaches discontent among the workers and the appropriation of capital goods, and is strongly prejudiced against political action.

During 1914 the I. W. W. continued very active. The leaders took a conspicuous part among the unemployed of New York City in the spring and it was charged that they instigated the raids on the churches. (See UNEMPLOYMENT.) An attempted general meeting of unemployed at Union Square under the auspices of the I. W. W. was broken up by the police, but this action elicited much hostile criticism. In Butte, Mont., the I. W. W. aided the newly-formed union opposed to the Western Federation of Miners.

BOYD CASE. A decision of momentous significance for the I. W. W. was handed down in the New Jersey courts. In October, 1913, F. S. Boyd, an I. W. W. leader, was given an indeterminate sentence of one to seven years in the penitentiary and fined $500 for advocating sabotage and telling the Paterson strikers to make use of it when back at work. He was held on the charge of inciting to the destruction of property. Last summer the conviction of Boyd was upheld by the New Jersey Supreme Court. Should the attitude of most of the courts be the same on this matter, the I. W. W. would be forced to relinquish the carrying on of its propaganda in the open.

INFANT HYGIENE. See HYGIENE.

INFANTILE SPINAL PARALYSIS. See POLIOMYELITIS.

INFANT MORTALITY. See VITAL STATISTICS.

INFUSORIAL EARTH. See CHEMISTRY, INDUSTRIAL.

INGALLS, MELVILLE EZRA. American railway official and financier, died July 11, 1914. He was born at Harrison, Me., in 1842, was educated at Brighton Academy and at Bowdoin College. He studied law at the Harvard Law School, receiving the degree of LL.B., in 1863, and for a time practiced law at Gray, Me., but soon removed to Boston. In 1867 he was elected to the Massachusetts Senate, and three years later began his railroad career, when he was chosen president of the Indianapolis, Cincinnati, and Lafayette Railroad. In the following year this road went into bankruptcy, and he was appointed receiver. Taking a leading part in the reorganization of the road, he placed its successor, the Cincinnati, Indianapolis, St. Louis, and Chicago Railway upon a paying basis. This road was consolidated in 1889 with the Cleveland, Columbus, Cincinnati, and Indianapolis Railway, and the Indianapolis and St. Louis Railway, into the Cleveland, Cincinnati, Chicago, and St. Louis Railway, known as the Big Four. Mr. Ingalls was made president, and in 1905 chairman of the board, but resigned from the chairmanship in 1912. He was also president of the Kentucky Central Railroad from 1881 to 1883, and of the Chesapeake and Ohio Railway Company from 1888 to 1900. His work in restoring the Indianapolis, Cincinnati, and Lafayette road is considered one of the most remarkable feats in railroad history, especially because he had had no previous experience in the railroad business. His success attracted the attention of the Vanderbilt interests, and this made possible the organization of the Big Four Railway. In politics Mr. Ingalls was a Democrat. He aided in the second election of Grover Cleveland to the Presidency and urged conciliatory measures between Mr. Cleveland and the President's opponents in Congress. When free silver came into the Democratic platform in 1896, he went with the sound money advocates, but did not take any active part in the campaign. In 1903 he was Democratic candidate for mayor of Cincinnati, but was defeated. In 1905 he was president of the National Civic Federation.

INITIATIVE AND REFERENDUM. See ELECTORAL REFORM.

INJUNCTION. The efforts of the trade unions to secure some change in the existing laws regarding the issuance of injunctions, resulted in the passage of the labor provisions in the Clayton Antitrust Bill. The latter prohibits the granting of restraining orders or injunctions by any United States court or judge, unless necessary to prevent irreparable injury to property or property right; nor can an order be given which will prohibit any person or persons from stopping work or from persuading others to work or stop work. (See TRADE UNIONS, *Clayton Bill.*) An injunction which elicited hostile criticism and which can no longer be issued by a Federal judge, was that allowed to the American Steel Foundries at Granite City, Ill., by Judge Humphrey. This "perpetually restrained and enjoined from in any way or manner whatsoever by use of persuasion, threats, or personal injury, intimidation, suggestion of danger or threats of violence of any kind, from interfering with, hindering, obstructing or stopping any person in the employ of the American Steel Foundries." Massachusetts also passed a statute providing that no injunction shall be granted where no irreparable injury was liable to be permitted.

CONTEMPT CASE. Early in the year, the contempt cases against Samuel Gompers, John Mitchell, and Frank Morrison were finally concluded. The Supreme Court decided that the statute of limitations barred the punishment of the defendants, but did not discuss the question as to the use of injunctions in labor disputes. The case started in December, 1907, when the Buck's Stove & Range Co. of St. Louis secured an injunction from Justice Wright of the Supreme Court of the District of Columbia restraining the officers of the American Federation of Labor from prosecuting a boycott. Claiming that this denied them the right of free speech, this injunction was strenuously objected to by those enjoined, and they refused to carry out some of the features of the injunction. They were found guilty of contempt of court for violating the injunction, and Messrs. Gompers, Mitchell, and Morrison were sentenced to twelve, nine, and six months' imprisonment respectively. These sentences were affirmed by the Supreme Court of the District with one justice dissenting. By the time the case reached the Supreme Court of the United States, the Buck Company and the Federation had settled matters, and the Court therefore dismissed the original injunction suit. However, it was held that the dismissal of the injunction should not prejudice the right of the original court to punish any contempt committed. The case thus again reached the Court of Appeals of the District of Columbia and Gompers was sentenced to jail for thirty days, while Mitchell and Morrison were fined $500 each. The case was re-argued before the United States Supreme Court April 20, 1914. In May this Court reversed the judgment because of the lapse of time since the act was committed. This conclusion was a distinct disappointment to all parties since such a hard-fought suit resulted in no judicial pronouncement on fundamental issues involved.

Another important case was that of the Hitchman Coal & Coke Co. of West Virginia against John Mitchell. In December, 1912, Judge Dayton, after giving a most detailed review of the history of the case, granted a perpetual injunction against John Mitchell and his associates, declaring that they had attempted to establish a monopoly of labor in the coal fields of the State. In May, the Federal Circuit Court of Appeals set this injunction aside but the Supreme Court has granted the request of the coal company to review the decision.

INSANITY. Owing to greater confidence in public provision for the insane; to greater longevity in the race, which results in bringing more people into the third and fourth decades of life, the most fruitful in insanity of some forms: and to the greater pressure of the strenuous life of to-day, the numbers of the insane under care are increasing in countries or States in which accurate statistics are compiled.

The New York State hospital commission (formerly State commission in lunacy) reported on Sept. 30, 1914, the number of committed insane and voluntary cases in the 16 State hospitals, together with the committed insane in licensed private houses as 16,897 men and 18,833 women, making a total of 35,721 patients (an increase of 690 over last year); of which number 1344 were inmates of Dannemora and Matteawan, the criminal institutions, and 1019 were in private retreats. There were 1300 on parole from civil hospitals. The net increase in the civil hospitals for the year was 758 against 975 for 1913, and 573 for two years ago. During the year over a thousand were returned to other States or deported to foreign countries. The total number admitted to civil hospitals during the year was 7956, of which number 6279 were first admissions and 1677 were readmissions. From the 14 civil hospitals 1703 were discharged as recovered, 1727 as improved; and 3008 died during the twelvemonth. The amount disbursed for maintenance was $6,729,126.79. Upon new buildings, extraordinary repairs or equipment, or emergencies was expended the sum of $495,889.08. The annual *per capita* for maintenance was $208.98 omitting calculation of the cost of lodging, against $206.08 last year. The ratio of the insane to the estimated population of the State was 1 to 277. The chief contributing cause, next to heredity, is alcohol; and syphilis is the determining cause in a large percentage of cases. These two preventable causes are the precipitating factors in over 40 per cent of the cases in New York State.

The Massachusetts State Board of Insanity reported on Nov. 30, 1913, in the latest published statement, a total of 13,766 patients for the year ending Oct. 1, 1913, including 6701 males and 7065 females, of which number 12 men and 324 women were under family care, in the "boarding out" system. Of the total mentioned, also, 115 men and 232 women were in private institutions. The increase for the year was 401 against 451 for the previous year, and 340 two years ago. The average annual increase for five years was 444. The increase of insane in private care was 2, compared with 16 last year. Court commitments totaled 3493 against 3093 last year. Voluntary admissions were 487 in number, compared with 254 the previous year. Of the total of 4051 admissions, 3108 were first cases, and of these 45.30 per cent were of foreign birth, and 69.46 per cent were born of foreign parentage. Alcohol was a causative factor in 18.46 per cent, syphilis in 8.72 per cent of first admissions. In the first cases, manic-depressive insanity occurred in 11.94 per cent, and dementia precox in 17.66 per cent. The recovery rate for the State was 13.52 per cent of the commitments, compared with 15.08 the previous year. The ratio of insane persons to the estimated population of the State was about 1 to 262.

The report of the commissioners in lunacy for England and Wales for Jan. 1, 1914, stated that the number of notified insane under care was

140,237 which exceeded that recorded a year ago by 1860. Of this number, 4744 men and 6501 women were called "private patients," including those in county and borough establishments (including idiots), in licensed houses (including idiots), and in naval military hospitals, and "private single patients." Of the total stated, 127,827 (59,604 men and 68,223 women) were classed as "paupers," and 1165 (889 men and 276 women) were classed as criminals. The new asylum at Rampton, for criminal insane, was completed in July, 1912, and on Jan. 1, 1914, the following was the disposition of the insane criminals: 767 in Broadmoor, 217 in Rampton, and 181 in county and borough asylums. The number of insane in England and Wales was as 1 to 266 of the estimated population, against 1 to 267 last year, and 1 to 275 two years before. The number discharged recovered in 1913 was 7296; discharged as "relieved," or "not recovered," 2609; while 10,617 died. From these figures were excluded 82 patients who had to be recertified as transfers. The recovery rate, reckoned upon total admissions, was 32.71 per cent; the rate for females being 38.08 and for males 30.09 per cent. In borough asylums the rate was 31.9 per cent; in hospitals, 46.1 per cent; in licensed houses, 37.4; and in "single care," 54.2 per cent.

The inspectors for lunatics in Ireland reported on Jan. 1, 1914, 13,030 men and 11,979 women, or in all 25,009 insane under care, representing a net increase of 170 during the year. Of this total, 886 were in "licensed houses and mental hospitals," 166 in Dundrum (the criminal institution), and 149 were "single chancery cases" and other patients in unlicensed private houses.

Of the total, 2672 (1378 men and 1294 women) comprised the first admissions. Alcohol is assigned as the principal or contributing cause in 388 cases or 14.5 per cent. The ratio of the insane of Ireland to the estimated population is 1 to 176.

A steady increase in the number of insane in Prussian asylums is reported. In 1901 there were 73,955 under care, while in 1911 there were 132,982 (73,953 male and 59,029 female) patients, an increase of 80 per cent in the decade. Over 1910 the figures had risen by 5068, or 3.9 per cent.

Magnan, head of the examination service of St. Anne's asylum, Paris, France, and Fillassier, head of the statistics department of Paris, report an increase in the known cases of insanity in the department of the Seine alone, from 27,169 cases registered between 1871 and 1880 to 43,035 cases registered between 1901 and 1910. Alcoholics formed more than 25 per cent of the number.

Boarding of insane persons in families under medical supervision, so many years practiced at Gheel, Belgium, and in recent years so elaborated in Scotland and to a very small degree in Massachusetts, is becoming comparatively general in Germany. From the asylum at Dalldorf, in 1913, 165 men and 158 women were thus boarded out in families, the greatest care being taken in selecting the cases and the caretakers. Two years ago Moeli established at Herzberge an institution to which discharged and other mental cases may repair for advice and suggestion or actual assistance. This is similar to the bureau established in Ogdensburg, N. Y., at the St. Lawrence State hospital in 1909, and later at others of the State.

During 1914 an interesting study of the incidence of insanity among the Jews in a New York city hospital for the insane was made by Brill and Karpas, to test the truth of the prevailing report of an excessively high proportion of mental cases among the Hebrew race. Their figures did not corroborate this report, but it was argued by Kirby that incidence of insanity cannot be determined from a comparison of an essentially immigrant population (such as the Jews in New York) with the native-born population, since the former contains a disproportionate number of young adults, while the native-born population contains from one-sixth to one-fifth of children and a much larger proportion of middle aged and old people. Fishberg showed, in this connection, that against 33 per cent of non-Jews, 95 per cent of Jews are city dwellers, who have a higher incidence of insanity than rural populations.

Savage of London concluded, from wide experience with private and hospital cases, that syphilis is the dominant, if not the sole, cause of general paralysis (paresis) of the insane. A deputation of members of the British Parliament, and of physicians, started a movement advocating the adoption of measures for the early treatment of mental cases, with a view to preventing insanity, and advocating admission and treatment of incipient cases without certification. This is a step further than the voluntary admissions into Massachusetts and New York State hospitals which have been so beneficial in those commonwealths for six or seven years.

INSECTS AND THE PROPAGATION OF DISEASE. The importance of the flea in transmission of plague is now generally admitted. Investigations into the precise method by which the disease is conveyed are constantly being made. Among the various ways which have been suggested whereby the flea may transmit plague are ingestion of the infected fleas by animals; mechanical conveyance of the bacilli to the healthy animal by the proboscis of the flea; infection of the salivary glands of the flea, inoculation with the bacilli then occurring through the deposition of saliva. It is admitted that animals may be inoculated with the dejecta of infected fleas. Bacot and Martin, of the Lister Institute in London, set out to ascertain whether or not the flea could infect during the act of sucking, and discovered that two species of rat-fleas, *Xenopsylla cheopsis* and *Ceratophyllus fasciatus*, could, when fed on septicemic blood, transmit the disease during the act of sucking, and that certain insects suffering from a temporary obstruction at the entrance of the stomach were largely responsible for all the infections. They found that in many infected fleas the bacilli developed so rapidly that the alimentary canal was occluded. The pest develops in the intercellular recesses of the proventriculus. Fleas in this condition can still suck blood, since the pumping apparatus is situated in the pharynx, but most of the blood is forced back into the wound as soon as the pumping operation is suspended. Such fleas are persistent in their efforts to obtain food and they are thus the more dangerous. They do not necessarily perish; in the course of a few days the alimentary passages may again become patent. It is, however, for the time incapable of ingesting fresh fluid and is therefore in danger of drying up should the temperature be high. The investigators are led to attach some importance to the connection between these facts and the observation that epidemic plague in India is limited to the cooler and moister seasons, and particularly the fact that in Central India the epidemics are abruptly terminated by the onset of the dry hot season. Studies of the life and habits of the common rat-flea of Great Britain were made by Strickland under government auspices. The important point brought out by the investigators was that the flea would readily feed on man, even more readily than on the rat, but it is remarked that the flea needs rat blood to enable it to reproduce. Rat's blood seems to contain a substance stimulating to the sexual organs of the flea. It was also discovered that an infected flea will live for at least 17 months in rubbish. In the absence of rubbish it will survive only for about a month.

Barber found that cockroaches may harbor cholera vibrios in their intestines, and these vibrios may be excreted in enormous numbers at least two days after the insects have been fed with human cholera excreta, and may occur in smaller numbers as long as seventy-nine hours after ingestion. Cockroaches therefore may act as carriers of the disease by infecting human food. Food thus contaminated will remain infected for 16 hours after the deposition of cockroach excreta and the vibrios retain their virulence after 29 hours' residence in the intestine of a cockroach. See PELLAGRA; POLIOMYELITIS; TROPICAL DISEASES.

INSTITUTE OF FRANCE. See ACADEMY, FRENCH.

INSURANCE. LIFE INSURANCE. *Statistics.* According to *The Spectator* the total assets of two hundred and thirty-five life insurance companies in the United States on Dec. 31, 1913, were $4,654,509,000, an increase of $246,551,000 over the year previous. The aggregate premiums for the year were $712,865,000; the total income, $922,353,000; their total disbursements aggregated $656,667,000, of which $468,026,000 went to policy holders. New insurance amounted to $3,334,117,000; of this, three-fourths was 'ordinary,' and the remaining one-fourth 'industrial.' The total amount of insurance in force in all companies was $20,527,908,000, of which slightly more than 80 per cent was 'ordinary' and somewhat less than 20 per cent was 'industrial.' Compared with a year earlier, the 'ordinary' insurance showed a gain of $1,044,562,000, and the 'industrial' a gain of $225,646,000. The gain in aggregate insurance amounted to 40 per cent during the last five years.

The preliminary report of the Insurance Department of New York showed that the thirty-five companies doing business in that State had total assets Dec. 31, 1913, of $4,351,747,000, of which over 56 per cent was credited to New York State companies, and nearly the entire remainder to other American companies. The Prussian Company with its home office in Germany was the only foreign concern. Among the assets were mortgage loans of $1,454,001,000; policy loans of $589,314,000; bonds and stocks, $1,948,254,000. The total assets increased during the year nearly one-fourth of a billion dollars. The total number of 'ordinary' policies in force Dec. 31, 1913, was 7,452,154, representing $14,304,638,000 insurance. This was an increase for the year of 450,241 policies and $777,317,000 insurance.

Policy Loans. Much attention has been given during the past few years to the remarkable increase in loans on life insurance policies. These loans increased from one-third of 1 per cent of the reserve funds of American companies in 1888 to 16 per cent in 1912 and nearly 18 per cent at the beginning of 1914. Total policy loans then amounted to nearly $600,000,000 dollars. The reason for this was universally believed to be a decline of thrift, reckless extravagance, a tendency to live beyond means. It was pointed out that these loans mean the withdrawal of an equal amount of insurance protection, since they are usually never paid back. Numerous writers contend that it is illogical to urge men to insure and then greatly stimulate them to borrow on their policies by enticing loan privileges. The movement therefore for the enactment of laws restricting loan privileges is getting headway.

This situation was well illustrated by the figures of the Mutual Life Insurance Company. On Dec. 31, 1913, loans to policy holders aggregated 14.5 per cent of the total assets of the company as contrasted with 4.8 per cent ten years earlier. To discourage borrowing on policies this company on January 31 raised the interest rate on policy loans from 5 per cent to 6 per cent and made this increase retroactive so far as policy provisions permitted.

Deer Lodge Case. The State of Montana passed a law requiring all insurance companies to pay a specified tax each year upon the excess of premiums collected in that State over losses and regular expenses within the State. This was attacked by the New York Life Insurance Company as being in violation of the interstate commerce provision of the constitution. The company showed that its business is done through agents who are instructed by mail or telegraph from New York City; that funds are deposited there; and that loans are determined there. In its decision early in the year the United States Supreme Court sustained the doctrine of the famous case of Paul v. Virginia decided in 1868 that insurance is not commerce. The Court held that insurance policies are only contracts of indemnity entered into for a consideration. Justice McKenna in rendering the majority opinion said, "to reverse the cases, therefore, would require us to promulgate a new rule of constitutional inhibition upon the States and would compel a change of their policy and a readjustment of their laws." Justices Hughes and Van Devantar dissented.

Federal Supervision. The above case was an important incident in the effort of numerous leading insurance companies to secure Federal supervision of insurance in place of the existing supervision by so many different States. This movement is led by President Kingsley of the New York Life Insurance Company. In reply to a letter from him, the heads of insurance companies in the United States expressed themselves as overwhelmingly in favor of Federal supervision, and as willing to exert every effort to secure it. Early in the year there was introduced in Congress the following resolution: "Congress shall have power to regulate the business (or commerce) of insurance throughout the United States, its territories, and possessions." It was the intention to secure passage of this resolution through Congress and have it submitted to the States as a proposed amendment to the constitution. The opinion of leading constitutional authorities was secured regarding it. Moreover the insurance companies took steps to secure an expression of the policy holders as to the desirability of such an amendment to the constitution.

Insurance Taxation. The discussion of the question whether premiums paid on life insurance policies should be subject to taxation, was continued throughout the year. The aggregate taxes paid by American life insurance policy holders in 1913 was $13,000,000. It was pointed out that this would have added fourteen per cent to the dividends paid policy holders, or it would have purchased $550,000,000 additional life insurance protection; or it would have reduced insurance quotations by more than 2 per cent.

Metropolitan Life. In November it was announced that plans were on foot for the mutualization of the Metropolitan Life Insurance Co. of New York. This company had a total of 14,500,000 policy holders of whom 13,000,000 were in the "industrial" department. There were over 14,250,000 nonparticipating policies. One of the advantages of the proposed mutualization was that these could be made participants in the savings and surplus. It had total insurance in force on Dec. 31, 1914, of $1,038,000,000. It was by all odds the largest company in the United States as regards policy holders and fifth as regards volume of insurance in force. Its capital stock worth $2,000,000 at par was divided into 80,000 shares. It was proposed that the company should buy this stock for $6,000,000, to be taken from the company's surplus of nearly $40,000,000. Though the stock paid but 7 per cent, the financial advantages of its ownership were sufficient to make $6,000,000 a fair valuation. A general meeting of the policy holders called on December 28 to consider the proposal, resulted in a vote of 65,000 in favor of the plan as against 1600 opposing it.

FRATERNAL INSURANCE. The report of the Insurance Department of New York showed that seventy-seven fraternal orders doing business in that State had total insurance in force Dec. 31, 1913, amounting to $6,193,000,000. Their income during the year was $88,483,000 and their disbursements $81,102,000. They reported total assets of $134,019,000. These orders had in force approximately 5,200,000 certificates of insurance, but were estimated to include not over sixty per cent of the total members of fraternal insurance organizations of the country. Vastly exceeding all other fraternal orders in size is the Modern Woodmen of America. This society had an income of $14,209,000 in 1913 and disbursements of $13,312,000. Its assets aggregated $13,896,000; and the insurance in force, $1,457,402,000, the latter being a decrease of $88,000,000. In the two years preceding Dec. 31, 1913 this organization showed a decrease of members between the ages of eighteen and fifty-four of 297,901, and an increase of those between fifty-five and eighty inclusive, of 22,600. During this same period members in the former age group paid in $2,432,000 more than they claimed in death losses, while those of the other age group paid in $2,100,000 less than their death losses. These figures indicate that the organization has reached a turning point in its history. The record of scores of fraternal orders that have risen and declined in the past shows that during the early years of rapid growth when the membership is comprised mainly in the lower age group, these societies meet all losses and expenses in spite of abnormally low assessments on members. But as the years pass and the age grouping of members changes showing a tendency for the older age groups to predominate, the introduction of sounder, actuarial principles becomes necessary.

FIRE INSURANCE. *Statistics.* According to the president of the Board of Fire Underwriters, the total net premiums received by fire insurance companies in the United States during the year 1913 amounted to $321,555,000; the losses aggregated $172,128,000; the total expenses were $128,579,000. If to losses and expenses increased liabilities of $16,448,000 be added, the amount of profit, exclusive of all sums accruing from investments, was only $4,398,000.

During the ten years preceding Dec. 31, 1913, the aggregate net premiums received were $2,675,312,000; losses paid were $1,502,508,000; expenses totaled $1,029,968,000; and liabilities increased $159,610,000. Exclusive of income from investments, the business showed a loss during the ten years, of $16,775,000. Thus in ten years the incomes of fire insurance companies taken at large have been due to the interest on their investments. This source of income, however, has been sufficient in most cases to pay satisfactory dividends and to add to surplus funds. According to the Insurance Department of New York State, 250 fire-marine and marine insurance companies doing business in that State reported assets of $699,351,000 on Dec. 31, 1913, an increase of $19,692,000 during the year. Their liabilities, other than capital, were $379,844,000. Their total income was $401,477,000; total disbursements, $376,177,000; and total insurance in force at the end of the year, $57,500,000,000, an increase of $5,000,000,000. The gain from underwriting was $16,528,000, and from investments, $5,388,000, but for various reasons, partly bookkeeping changes, there was a net loss in surplus of $10,041,000.

State Regulation. During the past few years a wave of State regulation of fire insurance companies has swept over the country. A number of States have authorized their insurance commissioners to fix the maximum rates for fire insurance companies operating within the State borders. The constitutionality of the Kansas fire insurance rate law was tested in the Supreme Court of the United States by the German Alliance Insurance Company of New York. The company argued that fire insurance is a private business as shown by its right to accept or reject proper business. The company held that if the State could fix the rates of fire insurance, it could fix the prices of any commodities. It held further that the fixing of fire insurance rates was not a valid exercise of the police power in the protection of life, health, and morality. By a vote of five to three the Supreme Court held that the State Legislature has power to regulate fire insurance rates. The opinion of the majority declared that the business of fire insurance is charged with a public interest.

At the convention of Insurance Commissioners and Superintendents of 25 States in New York City December 9–10 the enactment of uniform laws bringing rating associations under State supervision was favored. Also favored was the prohibition of discriminations between persons with similar risks. Other matters considered included the regulation of mutual fire and mutual casualty companies; the permission of fire companies to write automobile insurance; and the licensing of companies chartered in other States.

CASUALTY, CREDIT, FIDELITY, AND SURETY INSURANCE. During 1913 there were 62 insurance companies doing business of these sorts in New York State with total assets on December 31 of that year amounting to $170,162,000. The principal item of assets was corporation securities valued at $112,062,000. The capital of these companies amounted to $43,100,000; their surplus, $34,072,000; total premiums received during the year were $122,430,000; total losses paid were $53,984,000; commissions, $29,907,000; dividends, $5,877,000; salaries, fees, and traveling expenses, $17,296,000. The excess of disbursements over income was $4,844,000. See also SAVINGS BANKS, section *Savings Bank Insurance*.

INSURANCE, WORKMEN'S. See WORKMEN'S COMPENSATION.

INTEMPERANCE. See ALCOHOL.

INTERBOROUGH RAPID TRANSIT COMPANY. See RAPID TRANSIT.

INTERNAL COMBUSTION ENGINES. The year 1914 witnessed the progress of the internal combustion engine along lines which had been indicated previously. For central station work the small internal combustion engine had proved most serviceable, and large units were installed only with economical fuel, in fact virtually when it was a waste product. The two types of gas engines most used were those in which producer gas of some form was the fuel, and those, such as the Diesel engine, employing a liquid fuel. Improvements of the year consisted in making provisions for the scavenging of gases burned, and the introduction of the fresh charge under pressure, so as to secure an increased amount of fuel for the volume of the cylinder, and a corresponding increase in the output. Advantage was taken of the heat from the exhaust of the engine economically to generate steam available for the compression of the charge. Of course the limit was expected to be reached with the application of this method, consisting in the rising of pressure at the end of compression to the point at which preignition might occur. The Diesel engine was making headway slowly, receiving as it was, constantly, careful consideration and study from engineers, who had reached definite conclusions, as to its advantages within certain limits of size and conditions of operation. During the year, a 600-horsepower 4-cylinder Diesel engine for pumping service was built, this being the largest engine of this type to be constructed in the United States, up to the end of 1914. It was built by the Lyons Atlas Company of Indianapolis, for the Hawaiian Commercial and Sugar Company, to be used for irrigation purposes. It had four 21 by 31-inch cylinders, which would develop normally 600-horsepower, with a maximum of 690-horsepower, being designed to drive a 2-stage turbine pump of 15,000,000 gallons capacity against a head of 200 feet. It was built and guaranteed for continuous operation for 710 hours out of 720 hours per month, running on California asphaltum base fuel oil with gravity of 14° to 18° Baumé.

In connection with internal combustion engines, progress was being made to utilize the waste heat for heating water, making steam for heat, while for industrial purposes keeping boilers warm, or even for generating power by low pressure turbines.

Little in the way of progress in connection with gas and oil engines was to be recorded from Europe. In the hot bulb ignition type of oil burning engine, developments in practice were noted in Europe during the year. This engine is of simple construction, of moderate cost, with a moderate compression pressure. It does not show the economy of the Diesel engine, but is more readily adaptable for small sizes, and has a lower first cost and greater simplicity. The Ehrhardt-Sehmer Company of Saarbrucken, Germany, by thoroughly scavenging burnt gases, and introducing a fresh charge under pressure, was able to increase the power and efficiency of their machines. A blower, driven by a motor or by a turbine, supplied with steam from a waste heat boiler, was employed to deliver the air and gas under a pressure of 10 to 15 pounds, so that a heavier charge and better mixture of live gas was obtained, due to the lower temperature from scavenging and the pressure.

An interesting development in the way of producing economical power was that practiced at the works of the Ford Motor Co., combining a gas engine with a steam engine. See STEAM ENGINE.

INTERNATIONAL ARBITRATION AND PEACE. THE BRYAN-WILSON TREATIES. These treaties which are not strictly speaking arbitration treaties, but what the government calls "treaties for the advancement of peace," passed through the usual stages, being first proposed by identic note, accepted in principle, and then, embodied in treaties duly signed, presented to the appropriate parliamentary bodies, and after formal notifications and exchanges thereof, duly promulgated as law. Concerning these treaties, proposed by President Wilson and Secretary of State Bryan (see YEAR BOOK, 1913, page 41), the Foreign Relations Committee of the Senate of the United States Senate, said:—

"Their main purpose is to give time for nations engaged in international controversies to reflect, and to afford opportunity for subsidence of passion before hostilities shall begin; before the passions of war shall have inflamed a nation an opportunity is given for the influence of peace and reason to prevail. It is believed that the existence of such treaties as these will be most potential in preventing the precipitation of sudden wars such as now exist in Europe."

With informal discussion only, the Senate on Aug. 14, 1914, ratified 18 of the 20 treaties negotiated by Secretary Bryan. The treaties with Panama and the Dominican Republic were held up temporarily until it could be ascertained exactly what effect they would have on existing treaty relations. It was suggested that if either Panama or San Domingo sought to free itself from its present position of tutelage the treaties might prove embarrassing to the United States. The Senate's amendments were inconsiderable.

The treaties then ratified were with Norway, the Netherlands, Portugal, Switzerland, Denmark, Italy, Salvador, Guatemala, Honduras, Nicaragua, Bolivia, Persia, Costa Rica, Venezuela, Uruguay, Argentina, Brazil, and Chile.

Such opposition as there was came mainly from Senator Falls of New Mexico, who urged that any new convention should prevent the possibility of complications arising through an alliance with foreign interests by citizens of Panama to purchase ships.

The treaties ratified are generally of the same character and scope. They provide for the creation of an international commission with each country, to which disputes that may arise in the future, which diplomatic methods fail to adjust, shall be referred for investigation and report. The parties to the treaties agree not to declare war or begin hostilities during such investigation and before the report is submitted. The life of the treaties is limited to five years. The contracting parties are not bound by the finding of facts as made by the international commission, but each reserves the right to act independently upon the dispute after the report of the commission shall be submitted. Those with Salvador, Guatemala, Panama, Honduras, Nicaragua, and Persia contained a provision which the Senate eliminated, providing that the contracting parties agree not to increase their naval or military programme unless danger from a third Power should compel such increase pending report of the international commission. The committee agreed that this provision "would produce complications, and might embarrass this government far more than benefit it."

The World Peace Foundation has prepared a memorandum showing the action taken by the nations of the world on the several stages of these treaties, namely:

1. Negotiation proposed by identic note, accepted in principle;
2. Negotiation, resulting in treaties signed;
3. Ratification advised by parliamentary organs (where necessary);
4. Ratification by executives of States;
5. Exchange of ratifications;
6. Proclamation, promulgation, or publication of treaties to people.

Argentine-Republic. Order of acceptance in principle, 13; ninteenth treaty, signed at Washington, July 24, 1914; ratification advised by United States Senate, Aug. 14, 1914; ratified by President.

Austria-Hungary. Order of acceptance in principle, 9; invited to negotiate, Sept. 15, 1914; treaty signed at Washington.

Belgium. Order of acceptance in principle, 20; treaty signed at Washington.

Bolivia. Order of acceptance in principle, 11; seventh treaty signed at Washington, Jan. 22, 1914; ratification advised by United States Senate, Aug. 14, 1914; ratified by President.

Brazil. Order of acceptance in principle, 4; twentieth treaty, signed at Washington, July 24, 1914; ratification advised by United States Senate, Aug. 14, 1914; ratification by President.

Chile. Order of acceptance in principle, 22; twenty-first treaty, signed at Washington, Sept. 15, 1914; ratification advised by United States Senate, Oct. 13, 1914; approved by Chilean Congress, Nov. 17, 1914.

China. Order of acceptance in principle, 14; twenty-sixth treaty, signed at Washington, July 24, 1914; ratification advised by United States Senate, Aug. 14, 1914; ratified by President.

Costa Rica. Order of acceptance in principle, 24; twelfth treaty, signed at Washington, Feb. 13, 1914; ratification advised by United States Senate, Aug. 14, 1914; ratified by President.

Cuba. Order of acceptance in principle, 23.

Denmark. Order of acceptance in principle, 21; tenth treaty, signed at Washington, Feb. 5, 1914; ratified by Danish House, Feb. 27, 1914; rejected by Danish Senate, March 28, 1914; redrafted and signed at Washington, April 17, 1914; ratification advised by United States Senate, Aug. 14, 1914; ratified by President.

Dominican Republic. Order of acceptance in principle, 15; thirteenth treaty signed at Washington, Feb. 17, 1914; ratification advised by United States Senate.

Ecuador. Order of acceptance in principle, 33; twenty-seventh treaty, signed at Washington, Oct. 13, 1914; ratification advised by United States Senate, Oct. 20, 1914; ratified by President.

France. Order of acceptance in principle, 3; twenty-third treaty, signed at Washington, Sept. 15, 1914; ratification advised by United States Senate, Sept. 25, 1914.

Germany. Order of acceptance in principle, 12; invited to negotiate, Sept. 15, 1914; treaty signed at Washington.

Great Britain. Order of acceptance in principle, 2; twenty-fourth treaty, signed at Washington, Sept. 15, 1914; ratification advised by United States Senate, Sept. 25, 1914; ratified by the President, Nov. 4, 1914; ratified by Great Britain, Oct. 8, 1914; ratifications exchanged at Washington, Nov. 10, 1914; proclaimed and effective, Nov. 11, 1914, for five years; text, Treaty Series, No. 602 G.

Greece. Twenty-eighth treaty, signed at Washington, Oct. 13, 1914; ratification advised by United States Senate, Oct. 20, 1914.

Guatemala. Order of acceptance in principle, 16; second treaty, signed at Washington, Sept. 30, 1913; ratification advised by the Senate, with amendments, Aug. 13, 1914; ratified by the President, Aug. 27, 1914; ratified by Guatemala, May 15, 1914; ratifications exchanged at Washington, Oct. 13, 1914; proclaimed and in effect, Oct. 13, 1914, for five years; text, Treaty Series, No. 598.

Haiti. Order of acceptance in principle, 17; treaty signed at Washington.

Honduras. Order of acceptance in principle, 29; fourth treaty, signed at Washington, Nov. 3, 1913; ratification advised by United States Senate, Aug. 14, 1914.

Italy. Order of acceptance in principle, 1; fifteenth treaty, signed at Washington, May 5, 1914; ratification advised by United States Senate, Aug. 14, 1914.

Japan. Order of acceptance in principle, 31.

Netherlands. Order of acceptance in principle, 10; sixth treaty, signed at Washington, Dec. 18, 1913; ratification advised by United States Senate, Aug. 14, 1914.

Nicaragua. Order of acceptance in principle, 30; fifth treaty, signed at Washington, Dec. 17, 1913; ratification advised by United States Senate, Aug. 14, 1914.

Norway. Order of acceptance in principle, 6; sixteenth treaty, signed at Washington, June 24, 1914; ratification advised by United States Senate, Aug. 13, 1914; ratified by the President, Oct. 14, 1914; ratified by Norway, Sept. 18, 1914; ratifications exchanged at Washington, Oct. 31, 1914; proclaimed by President, Oct. 22, 1914; Treaty Series, No. 599.

Panama. Order of acceptance in principle, 28; third treaty, signed at Washington, Sept. 20, 1913; ratification advised by United States Senate.

Paraguay. Order of acceptance in principle, 27; twenty-second treaty, signed at Washington, Aug. 26, 1914.

Persia. Order of acceptance in principle, 32; ninth treaty, signed at Teheran, Feb. 4, 1914; ratification advised by United States Senate, Aug. 14, 1914.

Peru. Order of acceptance in principle, 8; seventeenth treaty, signed at Washington, July 14, 1914; ratification advised by United States Senate, Aug. 20, 1914.

Portugual. Order of acceptance in principle, 19; eighth treaty, signed at Washington, Sept. 20, 1913; ratification advised by United States Senate. Signed at Lisbon, Feb. 4, 1914; ratification advised by United States Senate, Aug. 13, 1914; ratified by the President, Oct. 21, 1914; ratified by Portugal, Sept. 26, 1914; ratifications exchanged at Washington, Oct. 24, 1914; proclaimed by President, Oct. 27, 1914; text, Treaty Series, No. 600.

Russia. Order of acceptance in principle, 7; treaty signed at Washington, Oct. 31, 1914; ratification advised by United States Senate, Oct. 13, 1914.

Salvador. Order of acceptance in principle, 25; first treaty, signed at Washington, Aug. 7, 1913; ratification advised by United States Senate, Aug. 14, 1914.

Spain. Order of acceptance in principle, 18; twenty-fifth treaty, signed at Washington, Sept. 15, 1914; ratification advised by United States Senate, Sept. 25, 1914; approved by Spanish Council of Ministers, Oct. 15, 1914.

Sweden. Order of acceptance in principle, 5; treaty signed at Washington; ratified Nov. 13, 1914.

Switzerland. Order of acceptance in principle, 26; eleventh treaty, signed at Washington, Feb. 13, 1914; ratification advised by United States Senate, Aug. 14, 1914.

Uruguay. Order of acceptance in principle, 35; eighteenth treaty, signed at Washington, July 20, 1914; ratification advised by United States Senate, Aug. 14, 1914.

Venezuela. Order of acceptance in principle, 34; fourteenth treaty, signed at Caracas, March 21, 1914; ratification advised by United States Senate, Aug. 14, 1914.

Pending Arbitrations. Naturally the European conflict has retarded the cause of international arbitration, as well as resort to it where it has been established, although arbitration negotiations under way (except of course between belligerents) have proceeded in their orderly course. The war has had no effect on arbitrations outside of The Hague machinery, and not pending between States at war. Such cases will take their regular course. The Hague Court will not hold sessions until after the war. The effect of the war on treaties between belligerents is to annul them, and they may be either resurrected or renewed after peace is effected. Treaties pertaining to the state of war have of course been brought into effect.

There are three well recognized types of arbitration: 1, that provided under "compromisory causes" in treaties of all kinds; 2, that provided for under general treaties requiring the submission of definite classes of cases; and 3, voluntary arbitration under the general engagement of The Hague Convention for the pacific settlement of international disputes.

The first type of arbitration may be illustrated by articles 7, 9, and 12 in the protocol of the Græco-Turkish treaty of peace of Nov. 1–14, 1913, by which it is agreed that all questions relating to the interpretation or application of those articles shall be submitted to arbitration. For several years this clause in treaties dealing with practical affairs has become customary, and war has put no bar to its use by the States which are not fighting. The second type customarily contains the first in a general application to all treaties between the parties and has not advanced greatly during the past year, or the previous one (See Year Book, 1913, page 41), as practically all States between which it was usable were already bound by such treaties. Many of these, the bulk of the 22 signed in 1908, and some of the 32 signed in 1909, have expired during the year, and have been renewed. The third type is important only as it results in the actual submission of disputes to arbitration. Such submission tends rather to decrease than increase by the operation of the same principle that makes it more likely that two persons will settle their difficulties between themselves when they know that if they fail the dispute will have to go to court, there to be judged on its merits.

Arbitration it must be constantly borne in mind is resorted to only after negotiation fails, and it yearly becomes clearer that arbitration is of great service to fair negotiation. Resort to arbitration, however, must and will occur for the irreducible minimum of cases to which it is applicable.

In the opinion of the World Peace Foundation, the tendency of the past year has been away from trying cases by arbitrators outside the panel of The Hague Tribunal.

On June 25, 1914, a decision was handed down in the *Dutch-Portuguese* case as to frontiers in the Island of Timor. Though a thorny dispute, the matter was a minor one, and the two small disputants wishing to avoid the expense of a large court, chose a single arbitrator from The Hague panel, feeling that the case should be decided under Hague auspices.

Pending before the Tribunal at the outbreak of war were two cases, one, *Spain, France, and Great Britain vs. Portugal,* relating to religious property in Portugal, and the other, *France vs. Peru,* relating to financial claims.

1914 witnessed a notable case of mediation. The intervention of the United States in Mexico in April was rapidly drifting into a state of belligerency by force of circumstances, when Argentina, Brazil, and Chile jointly tendered good offices and there resulted the Niagara Falls protocol of June 24, which enabled the United States to retire from Mexico, and which laid the basis for what it was hoped would be a solution of Mexico's tangled affairs. Some workers for peace regarded this settlement as important because of the spirit which prompted the mediation: the formal recognition of the unity of half the world, and their desire and demand for peace in the international community, and the practical application of the ideal of international coöperation, without apparent ulterior motives.

As a result of the friendly good offices of the United States, *Costa Rica and Panama* agreed to submit their long-standing dispute with respect to their boundary, which had already been the subject of an arbitral award by the President of France under date of Sept. 11, 1900, to the Chief Justice of the United States as sole arbitrator. The Chief Justice rendered his decision on Sept. 12, 1914. Costa Rica asked the arbitrator to award what may be called a primary line, or in the alternative, what may be called a secondary line. Panama claimed still another line. The award of the Chief Justice is substantially the secondary line asked by Costa Rica.

The present status of the *Pecuniary Claims* arbitration between the *United States and Great Britain* is one of suspended animation, owing to the great war. The tribunal met in Washington in the spring of 1914 for about three months; heard a number of cases argued, and handed down a number of opinions in cases which had been argued the year before in Canada. It then adjourned until July, when it met in Paris for the purpose of formulating and handing down its opinions on the cases argued in Washington last spring, which proceedings were interrupted by mobilization. The tribunal suspended its sessions without handing down any decisions, and has not yet been reconvened.

Of the 25 arbitration treaties negotiated in 1908, those with the Argentine Republic, Bolivia, and Chile never became effective by the exchange of ratifications. The treaty with Ecuador will not expire until June 22, 1915; that with Brazil, until July 26, 1916; and that with Uruguay, until Nov. 1, 1917. Of the remaining 19 treaties, 12 (those with France, Spain, Great Britain, Norway, Sweden, Japan, Germany, Switzerland, Portugal, Costa Rica, Austria-Hungary, and Salvador) have by renewal become effective for another period of five years. Agreements extending the treaties with Paraguay and the Netherlands for a further period of five years were also signed but have not been ratified on the part of either of the two countries named. Overtures for a renewal of the treaties were also made to China, Denmark, Peru, and Haiti, but have not as yet been responded to favorably. As no diplomatic relations have existed between the United States and Mexico for some time, negotiations for the renewal of the treaty with Mexico have not been possible.

The American Peace Society. In its 86th annual report for the year ending April 30, 1914, the American Peace Society pointed out that in five years the number of constituent branches had increased over 340 per cent; in seven years the paying members of the society have increased over 600 per cent; in five years the section societies have increased over 100 per cent. The net receipts of the society, including the branches, sections, and auxiliaries reached during the year the sum of $74,308.16, an increase over five years ago of 340 per cent. The net expenditures reached $64,657.05, an increase in five years of nearly 320 per cent. The American Peace Society is, we believe, the largest peace society in the world, having 6969 members at the present time. It was estimated that fifteen hundred lectures by one hundred and fifty lecturers have been given under its auspices during the year. The executive director in concluding his report said that the society had, during the preceding year, concluded its policy of quiet, constructive, educational work among the people. He added: "It initiated and directed successfully the Fourth American Peace Congress at St. Louis. It has on various occasions coöperated concretely with the government, and influenced legislation in behalf of arbitration and international peace. It has maintained its lecture bureau, its library of peace information, and it has distributed tons of literature to writers, speakers, schools, colleges, and libraries."

Dr. Benjamin F. Trueblood, secretary of the society for 23 years, resigned, on account of ill health, in 1914.

The World Peace Foundation (see Year Book, 1913, page 45) has pursued its work without interruption during 1914. Its annual report published in December announces the success of the Peace Conferences for Peace Workers in Boston, and the probable establishment of a Summer School of Peace. Special attention has been given to work among the schools, with gratifying results, and among the higher educational institutions. Denys P. Myers has prepared for the foundation an index of the 20 *Reports* of the Lake Mohonk Conference. In the opinion of the Foundation "the war year" has seen advances in the peace movement—"permanent advances, none the less real because they have been out of the ordinary developments of what is generically called the peace movement.". . . "The European War has affected the peace movement, as it has all other human activities; but it has given the peace movement a tremendous impetus. Ideas for which pacifists have stood were considered by people in general as a sort of philosophy before the war began. Since its outbreak these ideas have become the foremost programme of all forward-looking people, and nothing has given peace workers more satisfaction than to see the solutions of international problems for which they have labored dealt with by writers of all kinds quite independently of any pacifist prompting."

The board of trustees have prepared and formally submitted for the consideration of the American people the following declaration:

The influence of friends of peace everywhere, and especially in the neutral nations, should be steadily exerted to direct public attention toward the conditions which can alone make peace permanent. Some of those conditions we believe to be embodied in the following demands, which we commend to the consideration of our fellow-citizens:

1. No territory should be transferred from one nation to another in disregard of the will of the inhabitants, nor any readjustment be made of which the effect would necessarily be to sow the seeds of future war.

2. As the alliances and ententes of Europe have proved their incapacity to safeguard the welfare of the people, the nations of that continent should establish and maintain a representative council in order to insure mutual conference and concerted action.

3. Competition in armaments should end. The nations should agree to abandon compulsory military service and to limit military force to purposes of police and international defense.

4. All manufactures of arms, armaments, and munitions for use in war should hereafter be national property. No private citizen or corporation should be permitted to engage in such manufacture. The export of such goods for use in armies and fleets should be prohibited.

5. No neutral nation should permit its citizens to make loans to belligerents for war purposes. As our own State Department has said: "Loans by American bankers to any foreign na-

tion which is at war are inconsistent with the true spirit of neutrality."

We believe that the delusive argument that armaments are the only sure guarantee of peace and national security has now been exposed in all its hideous falsity. We call upon all the world to witness that the spirit of militarism leads to brutality and slaughter, and that the only principle of international relations consistent with civilization is that of Peace with Justice under Law.

A UNIVERSAL PEACE CONGRESS was to have been held in Vienna, September 15–19, that being the twenty-fifth anniversary of the first Congress in 1889, and the hundredth since the Peace of Vienna rearranged Europe and sent Napoleon to Elba. The outbreak of the European War resulted in the indefinite postponement of all the plans.

THE INTERNATIONAL PEACE BUREAU. Recommendations that the Commission of the International Peace Bureau at Berne be called to meet at the earliest possible moment were sent out in October by Dr. Ludwig Quidde, president of the German Peace Society (now at The Hague), and Dr. B. de Jong Van Beek En Donk, editor of the organ of the Dutch Peace Society.

Dr. Quidde, in an open letter, enumerates certain of the tasks which the bureau should at once undertake:

(1) The *mobilization* of public opinion in the neutral countries. The formation of committees representing all organizations and parties to carry on the campaign for mediation and pacific settlement. This should be done on the initiative and under the unifying agency of the Berne Bureau. . . . In short, the bureau is the natural and logical international centre for the movement for peace.

(2) There should be bureaus for communication between the pacifists of the belligerent countries and their fellow-workers. Berne and The Hague have already become such centres, but others are needed.

(3) Interchange of reliable and nonpartisan news. National passion is inflamed and hatred stirred up by the one-sided and fantastic reports that are being spread abroad. Perhaps there should be published a bulletin for the dissemination of accurate information.

(4) Shall there be a declaration by the pacifists concerning the violations of international law? Shall these be investigated by an impartial commission?

(5) Documents should be collected dealing with the history that preceded the outbreak of the war.

(6) A commission perhaps ought to be formed to prepare for the international treaty to be made after the restoration of peace.

Dr. de Jong Van Beek En Donk states four reasons for the calling of the Berne Bureau:

(1) It should lead in combining and giving utterance to the different ideas now finding expression in the neutral countries.

(2) It ought to form an international organization of pacifists, a separate organization, to include representatives of all sorts of bodies. In Holland, for example, the Dutch Peace Society has formed a "Dutch Council against War," consisting of representatives of all political organizations, labor parties, and the like.

(3) It could make use of the present time to study the great problems which will demand solution after the war closes; small committees could be named to study limitation of armaments, a federation of the nations, the abolition of secret diplomacy, etc.

(4) It could declare its continued belief in *internationalism*, and speak for all the pacifists of all the nations as with one voice.

THE NOBEL PRIZE FOR 1914. The prize was awarded in 1914 for 1913 to Senator Root of the United States and to La Fontaine of Belgium (YEAR BOOK, 1913, p. 43). Since then there have been proposals suggesting that it should be given to King Albert of Belgium, or to the King of Sweden. It has been rumored that it has been decided not to award the prize at all. At any rate none has been formally awarded to date (Jan. 15, 1915).

INTERNATIONAL TRADE ROUTES AND INTERNATIONAL EDUCATION. A numerously signed and a widely distributed statement sets forth, that in the judgment of those signing it Germany and England are fighting primarily for control of the trade routes of the world, "Germany wanting these for the development of her markets, and England for her own security." If this is the case, they ask, "Can the conflict be permanently settled until all international trade routes, cables, etc., are under the joint control and protection of all nations?" declaring that "Certainly, until such plans are developed, nations will have no incentive to pool their armaments for international police duty, as they will never so combine simply to compel other nations to abide by treaties or court decrees which do not directly affect them. Nations, however, would naturally combine to protect the neutrality of the trade routes and the joint regulation of national barriers—after such neutrality and joined power has once been secured. Wars between nations can permanently be ended only in the same manner as revolutions within nations have been made to cease; namely, by providing machinery which will enable nations to secure, peacefully, the same results as they could secure by armed conflict. Hence the ultimate success of The Hague Court is dependent upon the adding of a representative legislative body which shall—among other things—neutralize and regulate inter-nation trade channels and barriers. Until such plans are developed and the United States is a part thereof, we should continue to increase our armaments, and seriously prepare for war. Unless we are willing to join other nations in yielding some of our sovereignty rights for the good which would come to us from such a federation, then we should be prepared to fight. Whether or not an international federation would be to our immediate advantage may be a debatable question; but all should realize (1) that there is no halfway position, and (2) that as the first step some nation must inaugurate a systematic world educational campaign to teach the advantage of such a federation."

ONE HUNDRED YEARS OF PEACE. The American Peace Centenary Committee 1914–15 to celebrate the 100 years of peace that has existed between the United States and Great Britain has been busily engaged in its preparations (see YEAR BOOK, 1913, p. 44), although the formal celebration has been postponed until the close of the European War. In the interest of the movement a statement to the people of the United States, signed by a long list of distinguished men, headed by William H. Taft and Joseph H. Choate, has been issued. It was published on the anniversary of the signing of the Treaty of Ghent.

"We appeal to the people in all the States and to all civic bodies," says the statement, "to mark this notable anniversary by suitable exercises in the churches of all denominations on the 14th of February, the date agreed upon for that purpose with our associate, the Canadian Committee; by formal addresses at the capitals of the respective States on the 17th and 18th of February, the dates of the ratification and proclamation of the Treaty; and also by appropriate exercises in all the schools on the 22d of February, or on such later date or dates in the spring of 1915 as may be locally deemed preferable."

An informal conference of the American Committee with the Canadian and Newfoundland Committees was held at Mackinac Island, Mich., in July.

THE CHURCHES AND PEACE. The Church Peace Union (endowed by Andrew Carnegie) was organized in February, 1914, with the Bishop of New York (Rt. Rev. David H. Greer, D.D.) as president. At the first annual meeting in December it was decided to set aside a sum of several thousand dollars for organizing the churches of the world into a permanent World Alliance of the Churches for Promoting International Friendship. Ten thousand dollars was appropriated "to arouse the churches of the United States to a realization of their duties in regard to the terms of peace in Europe and the threatened growth of militarism here." Another appropriation of $10,000 was made for introducing systematic peace instruction into the Sunday schools and promoting the observance of Peace Sunday, and a further sum of $3000 for the work through the Federal Council of Churches in promoting friendly relations with Japan. The Rev. Frederick Lynch is secretary of the Union. His address is 70 Fifth Av., New York.

Five thousand dollars was again set aside for prize essays, by theological students, Sunday school pupils, and church members, on international peace.

In connection with the meeting of the Executive Committee of the Federal Council of the Churches of Christ in America, a number of measures were adopted that bore directly on the peace movement. One provided for organizing the churches in local committees in the interest of international peace and for publishing a book (to be prepared by Dr. Sidney L. Gulick) in this interest and placing it in the hands of every pastor in the nation. Two ambassadors to the churches of Japan were appointed, the president of the council, Prof. Shailer Matthews and Dr. Gulick. These gentlemen will sail Jan. 9, 1915, to enter on their important mission.

THE CHURCH PEACE CONFERENCE which had been called to meet at Constance on the border between Germany and Switzerland on August 2, met, notwithstanding war conditions, on that date. Thirteen nations and 35 different religious bodies were represented. Many delegates were not able to reach the seat of the conference. About 50 American delegates were present. Dr. Frederick Lynch was elected secretary. Resolutions were adopted and sent to the European rulers and to President Wilson. The American delegates left Constance on August 3 by the last train to Holland, under the special protection of the Emperor of Germany and of the Grand Duchess of Baden. They arrived in London on Tuesday night, reassembled there in conference, and passed strong resolutions making large plans for a future campaign for peace through the churches. The Church Peace Union has published an extended account of the conference.

PRESIDENT WILSON'S OFFER OF MEDIATION. On Aug. 4, 1914, the President of the United States sent to King George of England, Emperor Nicholas of Russia, President Poincaré of France, Emperor William of Germany, and Emperor Franz Joseph of Austria, an offer of mediation.

In due time replies were received from all the governments of the warring nations, but they were in the nature of formal acknowledgments merely. The secretary, in discussing the situation, said that it might be some time before the nations would be ready to listen to any idea of mediation, but that the United States had put itself on record as ready to render every assistance toward restoring peace at the earliest moment possible. The administration has officially disapproved of loans by American capitalists for belligerent purposes.

AN EMERGENCY FEDERATION OF PEACE FORCES designed ultimately to include all the peace organizations of the world, was organized in Chicago, Dec. 19, 1914, at a meeting over which Miss Jane Addams presided. The federation adopted what it calls a "minimum programme" on which all its activities shall be based until the great conference shall make some change. In brief this programme provides:

Either that President Wilson shall be urged to invite the neutral countries of Europe to name envoys to act with other envoys named by him to urge the warring nations to declare cessation of hostilities until they receive a message from the United States, "being confident that this armistice would be the first step toward permanent peace," or that the neutral powers of the world shall issue a joint offer of mediation to the warring nations.

In the terms of settlement these agreements should be included:

1. No province shall be transferred from one government to another without the consent by plebiscite of the population of such province. The plebiscite, in which women shall be included, shall be taken by an international commission of neutral nations.
2. No war indemnities shall be assessed.
3. No treaty, alliance, or other arrangement shall be entered upon by any nation unless ratified by the representatives of the people. Adequate machinery for insuring democratic control of foreign policies shall be created.

The belligerents should be urged to agree to these terms:

1. Foreign policies of nations shall not be aimed at creating alliances for the purpose of maintaining the "balance of power," but shall be directed to the establishment of a concert of nations, with

(a) Court or courts for settlement of all disputes between nations;

(b) An international congress, with legislative and administrative powers over international affairs, and with permanent committees in place of present secret diplomacy;

(c) An international police force.

Organizations forming the federation are: The Chicago Peace Society, the Political Equality League, the Chicago Woman's Club, the Socialist Women's League, the Chicago School of Civics and Philanthropy, the Penny Phone League, the Chicago Teachers' Federation, the Iroquois Club, the Playground and Recreation Association of America, the Young People's Socialist League, the Chicago Progressive Club, the Illinois Equal Suffrage Association, the Social Service Club, the Single Tax Club, the National Socialist Party, the Federation of Churches, the National Socialist Women's Committee, the executive board of the Chicago Federation of Labor, the Women's City Club, the Women's Trade Union League, and the Socialist Party of Cook County.

A **League of Peace** has been suggested by Hamilton Holt, editor of *The Independent*. He aims at the extension of the federal idea, as exemplified in the United States, to a federation of nations, with a government founded on law, and using force only as a police power against nations not yet willing to abandon aggression and enter the league. The principles on which he would have the League of Peace formed are these:

1. The nations of the league shall mutually agree to respect the territory and sovereignty of each other.
2. All questions that cannot be settled by diplomacy shall be arbitrated.
3. The nations of the league shall provide a periodical assembly to make all rules to become law unless vetoed by a nation within a stated period.
4. The nations shall disarm to the point where the combined forces of the league shall be a certain per cent higher than those of the most heavily armed nation or alliance outside the league. Detailed rules for this pro rata disarmament shall be formulated by the Assembly.
5. Any member of the league shall have the right to withdraw on due notice, or may be expelled by the unanimous vote of the others.

In commenting upon the announcement made over the cables that, "The British, French, and Russian governments, on Saturday, September 5, mutually agreed not to make peace separately during the present war, and no one of them shall demand conditions of peace without the previous approval of the others," Andrew Carnegie declared:

"Here the allied nations combine and act as one. After the present belligerents agree upon peaceful settlement, Germany and Austria should be the first invited by the allies to join in forming a League of Peace. Should they accept, then some of the other nations might be invited. At the first meeting of the league some general principles might be formulated: First, one general World Peace Commission shall be established to which each member shall contribute toward expenditure in proportion to its population and wealth. Their respective fleets shall be merged, controlled and operated under such management as the league may direct from time to time. No war policy, or attack upon any nation or fleet shall be made except by a majority vote of two-thirds of all the members of the World Peace League, and then only after timely notice to the nations threatened. The commission shall exercise undisputed authority, always provided it is sustained and its action approved from time to time by two-thirds of the total membership.

"An executive committee shall be elected by two-thirds majority of the commission, a separate vote being taken upon each candidate. This committee shall elect a president and vice-president by a majority vote who shall each serve four years, but the vice-president shall serve six years for the first term, and his successor be elected for four years, thus preventing the simultaneous change of both the former high officials."

The Twentieth Annual Lake Mohonk Conference of International Arbitration was held on May 27, 28, and 29. The official utterance of the conference embodies only those principles upon which the members unanimously agree. The platform for 1914, after calling attention to the horrors of war, recognized as of far-reaching importance the acceptance of mediation in regard to the Mexican situation, and urged that steps be taken by the American government looking to the convoking of the Third Hague Conference, recommending, in addition to the present permanent board of arbitration at The Hague, the creation of a board with a determinate personnel. The organization of the Church Peace Union was gratefully recognized, and the proposed celebration of the Centenary Peace Union between the United States and Great Britain to be held on Christmas Eve, 1914—the anniversary of the treaty of peace—was heartily approved.

Carnegie Endowment for International Peace. Its *Year Book* for 1913–14 contains the reports of the different divisions, as well as the secretary's report, and gives in detail the various activities of the endowment, accentuating those which seem to be the most important and influential. The establishment of the Academy of International Law at The Hague was perhaps the most important project falling within the activities of the Division of International Law. This academy was established early in 1914 at The Hague in coöperation with the Carnegie Endowment. It is to be a centre of advanced studies in international law, both public and private, and of related sciences, for the purpose of facilitating a profound and impartial study of the questions of international relations. To this end, "the most competent men of the different States are called upon to teach by means of courses, lectures, or seminars, the most important subjects relating to international theory, practice, legislation, and jurisprudence, particularly as resulting from the action of conferences and from international awards."

The American Institute of International Law was founded Oct. 12, 1912, and the final organization effected in 1913. It parallels the Institute of International Law of Europe, but as its name implies, is confined to the Western Hemisphere. Each country on the hemisphere is represented in the present institute and, if the purposes of its founders are to be fulfilled, it will be an influential means for extending interest in the study of international law and the relations of the different countries of the Western Hemisphere.

The Association for International Arbitration whose monthly publications average 80,000 copies, operates in connection with the Carnegie Endowment, as do now such bodies as the American Peace Society, Le Bureau International Permanent de la Paix, the International Arbitration League, and the Franco-American League, all of which enjoy subventions from the endowment. The offices of the Carnegie Endowment for International Peace are: for the Division of Intercourse and Education and for the Division of Economics and History, 407 West 117th Street, New York City; for the Division of International Law, No. 2 Jackson Place, Washington, D. C.

The Hon. Robert Bacon, formerly Secretary of State and formerly Ambassador to France, at the instance of the Carnegie Endowment undertook a journey to South America "to secure the interest and sympathy of the leaders of opinion in the principal Latin-American republics in the various enterprises for the advancement of international peace which the endowment is seeking to promote and by means of personal intercourse and explanation to bring about practical coöperation."

INTERNATIONAL PANAMA-CALIFORNIA EXPOSITION. See EXPOSITIONS.

INTERNATIONAL PANAMA-PACIFIC EXPOSITION. See EXPOSITIONS.

INTERSTATE COMMERCE COMMISSION. See RAILWAYS, *passim*.

INTESTINAL STASIS. See SURGERY.

IODOFORM. See LEPROSY.

IONIAN ISLANDS. See EARTHQUAKES.

IONIZATION. See PHYSICS.

IOWA. POPULATION. The estimated population of the State on July 1, 1914, was 2,221,755. The population in 1910 was 2,224,771.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	...1914	10,248,000	389,424,000	$194,712,000
	1913	9,950,000	838,300,000	202,980,000
Wheat	..1914	810,000	15,066,000	14,463,000
	1918	795,000	16,895,000	12,460,000
Oats	...1914	5,000,000	165,000,000	67,650,000
	1918	4,880,000	168,360,000	57,242,000
Rye	1914	59,000	1,121,000	863,000
	1913	60,000	1,092,000	655,000
Barley	..1914	860,000	9,360,000	5,148,000
	1918	400,000	10,000,000	5,500,000
Potatoes	1914	147,000	12,642,000	7,459,000
	1918	150,000	7,200,000	5,904,000
Hay	1914	2,950,000	*a* 4,071,000	41,117,000
	1918	8,000,000	4,440,000	42,624,000

a Tons.

MINERAL PRODUCTION. The mineral production of the State in 1913 reached a value of $25,602,015, an increase over the value of the product of 1912 of $2,701,665. The two principal mineral industries of the State are coal mining and clay working, which contribute nearly 80 per cent of the total value. Iowa ranks tenth among all the States and second among the States west of the Mississippi River in the production of coal. There were produced in the State in 1913, 7,490,641 short tons, valued at $13,431,061. This was an increase over 1912 of 201,112 tons in quantity and of $278,973 in value. The slight increase in the production over 1912 was due to the disturbed labor situation in Colorado. Iowa is primarily an agricultural State, and the markets for its coal, outside of that taken by the railroads, are chiefly in rural communities and cities of moderate size that are dependent on agricultural trade. Some coal is shipped from Iowa to Nebraska, Minnesota, and other States, but an equal amount comes into the State from Illinois and eastern fields. The number of men employed in the coal mines in 1913 was 15,679, compared with 16,370 in 1912. The coal production in 1914 showed a considerable decrease. The clay-working industries in 1913 showed a decided improvement over the preceding year, the product increasing in value from $4,522,326 to $5,573,681. The manufacture of Portland cement is the third industry in importance. The output in 1913 showed an increase of about $1,000,000 over that of 1912. The value of the gypsum products in Iowa in 1913 was $1,157,939, an increase of more than $300,000 over the preceding year.

EDUCATION. In 1913 the school population of the State between the ages of 5 and 21 was 671,016. The total enrollment in the public schools was 507,845 and the average daily attendance was 369,874. The total number of teachers was 27,432, of whom 24,888 were females and 2544 were males, the average monthly compensation of male teachers being $83.22 and of female teachers $49.91. The total expenditures for schools in 1913 was $16,442,528, and the total number of schoolhouses in the State in that year was 13,858. The Legislature of 1913 passed a measure providing for the teaching of elementary agriculture, domestic science, and manual training in the public schools after July 1, 1915.

TRANSPORTATION. The total mileage of steel railway main track in the State in 1914 was 9998, compared with 9975 in 1913. The total mileage of interurban railways was 452, compared with 448 in 1913. The railways having the longest mileage were the Chicago, Burlington, and Quincy, 1356; the Chicago, Rock Island, and Pacific, 2203; the Chicago, Milwaukee, and St. Paul, 1867; the Chicago and North Western, 1601; and the Chicago Great Western, 772.

FINANCE. The report of the State Treasurer for the biennial period 1912–14 shows a balance on hand on July 1, 1912, of $1,041,486. The total receipts from all sources for the period amounted to $11,524,770, and the disbursements to $11,828,396, leaving a balance on hand June 30, 1914, of $737,860. The total floating debt of the State on July 1, 1914, was $142,313; the State has no bonded debt.

CHARITIES AND CORRECTIONS. The institutions under the direct control of the Board of Control for State Institutions are as follows: the Reformatory, Anamosa; Cherokee State Hospital, Cherokee; Clarinda State Hospital, Clarinda; School for the Deaf, Council Bluffs; Soldiers' Orphans' Home, Davenport; Industrial School for Boys, Eldora; State Penitentiary, Fort Madison; Institution for Feeble-minded Children, Glenwood; Independence State Hospital, Independence; State Hospital for Inebriates, Knoxville; Soldiers' Home, Marshalltown; Industrial School for Girls, Mitchellville; Mount Pleasant State Hospital, Mount Pleasant; and the State Sanatorium, Oakdale. The total expenditures for the maintenance of these institutions for the two years ending June 30, 1914, was $4,546,468. The average number of inmates during this period was 9309.

POLITICS AND GOVERNMENT. The State Legislature was not in session in 1914 as the sessions are biennial and the last was held in 1913.

There were elections for United States Senator, members of the House of Representatives, and for Governor. On February 10 an election was held for a Representative in Congress to succeed Congressman Pepper, who died. Henry Vollmer, the Democratic candidate, was successful. He received 12,285 votes, against 10,435 for H. E. Hull, Republican, and 3672 for Charles P. Hanley, Progressive. The total vote was only 68 per cent of the vote in 1912. At the Republican primary June 1, the Republicans renominated Senator A. B. Cummins and Governor George W. Clarke and at the election in November they were elected, the former by 40,000 over Maurice Connolly, Democrat, and the latter by 25,000 over John T. Hamilton, Democrat. Schenk, Progressive candidate for Senator, polled about 15,000 votes. The total vote cast for Governor was 422,579, as compared with 492,356 in 1912. The Republican vote showed a gain of over 100,000; the Democratic vote a loss of nearly 20,000, and the Progressive vote a loss of nearly 150,000. The Republicans elected 10 members of the House of Representatives and the Democrats one. The Republicans control the General Assembly by 60 majority.

The sterilization law passed by the Legislature of 1913 was declared unconstitutional on June 24 by the United States District Court, and the "blue sky" law, regulating investment companies, passed by the same Legislature, was also declared unconstitutional on July 6.

STATE OFFICERS, 1915. Governor, George W. Clarke, Republican; Lieutenant-Governor, W. L. Harding, ————; Secretary of State, W. S. Allen, Republican; Auditor, Frank S. Shaw, Republican; Treasurer, W. C. Brown, Republican; Attorney-General, George Cosson, Republican; Superintendent of Education, A. M. Deyoe; Adjutant-General, Guy E. Logan—all Republicans.

JUDICIARY. Supreme Court: Chief Justice, Horace E. Deemer; Judges, William D. Evans, Frank R. Gaynor, Byron W. Preston, Silas M. Weaver, Scott M. Ladd, Benj. I. Salinger; Clerk, Burgess W. Garrett—all Republicans.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	36	74	110
Democrats	14	34	48
Republican majority	22	40	62

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

IOWA, STATE UNIVERSITY OF. A State institution for higher education, founded at Iowa City, Iowa, in 1847. The students enrolled in the several departments in the autumn of 1914 were 2678, and the faculty numbered 275. The notable changes in the faculty during the year included the election of Dean McClain to the College of Law, Dean Dean to the College of Medicine, and T. H. MacBride to the presidency of the university. There were no noteworthy benefactions received during the year. The productive funds at the end of 1914 amounted to $259,733. The annual income amounted at the same time to $911,707. The library contains about 110,000 volumes.

IRELAND. See GREAT BRITAIN.

IRON AND STEEL. The course of the iron industry in 1913 was unusual in several respects. The production of iron ore, pig iron, and steel exceeded that of any previous year, and stocks of finished products were reasonably low at the close of the year, yet this apparently favorable record does not accurately reflect the actual conditions for the year as a whole. The activity of the closing months of 1912 characterized the first quarter of 1913, and continued to some extent during the second and third quarters of the year. In the latter part of the year, however, the production of the metals greatly declined and prices dropped nearly to the low level of 1911.

The quantity of crude iron ore mined in the United States in 1913 was 61,980,437 long tons, compared with 55,150,147 long tons in 1912, an increase of 6,830,290 long tons, or 12.38 per cent. The quantity of iron ore shipped from the mines in 1913 amounted to 59,643,098 long tons, valued at $130,905,558, as compared with 57,017,614 long tons, valued at $107,050,153 marketed in 1912. Iron ore was mined in 28 States in 1913, compared with 27 in 1912. Of these States, three—Idaho, Montana, and Nevada—produced ores for fluxing only. Half of Colorado's production was for fluxing and half for pig iron; the magnetic ore of Utah was shipped to a Salt Lake iron foundry for testing a new method of reduction and the remainder was used for fluxing; the remaining States produced iron ore for blast-furnace use only, except small tonnages for paint from Georgia, Michigan, New York, and Wisconsin. The five States producing the largest quantity of iron ore in 1913 were Minnesota, Michigan, Alabama, New York, and Wisconsin. The rank of these States remained unchanged in 1913. The Minnesota iron ranges produced in 1913, 62.37 per cent of the output of the United States. The Lake Superior district, comprising all the mines of Minnesota and those in northern Wisconsin, mined 52,377,362 long tons in 1913, or 84.51 per cent of the total production. The accompanying table gives the rank and production of the iron-mining States in 1912 and 1913.

State	*Rank*	*1912 Mined* Quantity, in long tons	*Percentage of total*
Minnesota	1	34,431,768	62.43
Michigan	2	11,191,430	20.29
Alabama	3	4,563,603	8.28
New York	4	1,216,672	2.21
Wisconsin	5	860,600	1.56
Pennsylvania	6	517,081	.94
Virginia	7	446,805	.81
Tennessee	8	416,885	.76
New Jersey	9	364,673	.66
Georgia	10	134,687	.24
Missouri	11	43,480	.08
Ohio	12	10,346	.02
Utah	13	7,280	.01
Other States		945,387	1.71
Total		55,150,147	100.00

State	*Rank*	*1913 Mined* Quantity, in long tons	*Percentage of total*
Minnesota	1	38,658,793	62.37
Michigan	2	12,841,093	20.72
Alabama	3	5,215,740	8.42
New York	4	1,459,628	2.36
Wisconsin	5	1,018,272	1.64
Wyoming	6	537,111	.87
Pennsylvania	7	489,056	.79
Virginia	8	483,848	.78
Tennessee	9	370,002	.60
New Jersey	10	325,805	.53

State	*Rank*	*1913 Mined* *Quantity, in long tons*	*Percentage of total*
New Mexico	11	164,085	.26
Georgia	12	155,236	.25
North Carolina	13	69,235	.11
Missouri	14	39,854	.06
Utah	15	14,690	.02
Ohio	16	7,849	.01
West Virginia	17	7,808	.01
Kentucky	18	3,400	.01
Montana	19	2,475	
California	20	2,092	
Other States		115,870	.19
Total		61,980,437	100.00

In 1913 there were 411 iron ore mines active, as compared with 382 in 1912. The largest quantity produced by any single mine in 1913 was 3,457,608 long tons of hematite, at the Hull Rust mine, near Hibbing, on the Mesabi Range, Minn. The general average price of all kinds of iron ore in the United States was $2.19 in 1913, compared with $1.88 in 1912. There were imported into the United States in 1913, 2,594,770 long tons of iron ore, with a value of $8,336,819. Of this, Cuba produced approximately 63 per cent and Sweden 14 per cent. Most of the remainder came from Newfoundland, Labrador, Canada, and Spain. The exports in 1913 amounted to 1,042,151 long tons, valued at $3,513,419. The production of iron ore in the principal countries from 1910 to 1913 is shown in the accompanying table:

Country	*1910*	*1911*	*1912*	*1913*
North America:				
Canada *a*	281,623	187,807	192,753	274,673
Cuba *a*	1,462,498	1,163,714	1,397,797	1,582,431
Newfoundland	1,108,762	1,171,992	(*b*)	(*b*)
United States	57,014,906	43,876,552	55,150,147	61,980,437
South America:				
Chile		28,150	(*b*)	(*b*)
Europe:				
Austria-Hungary	4,592,572	4,779,851	(*b*)	(*b*)
Belgium	121,024	148,130	164,734	(*b*)
France	14,375,984	16,376,967	(*b*)	(*b*)
German Empire and Luxemburg	28,257,579	29,408,812	(*b*)	(*b*)
Greece	527,040	493,106	(*b*)	(*b*)
Italy	542,578	367,900	572,900	(*b*)
Norway	100,834	217,051	(*b*)	(*b*)
Portugal	3,307	19,233	(*b*)	(*b*)
Russia	(*c*)	(*c*)	(*b*)	(*b*)
Spain	8,530,310	8,635,523	(*b*)	(*b*)
Sweden	5,465,234	6,056,868	(*b*)	(*b*)
United Kingdom	15,226,015	15,519,424	13,790,391	(*b*)
Asia:				
China *d*	130,472	109,542	(*b*)	(*b*)
India	54,626	366,180	(*b*)	(*b*)
Japan	(*e*)	(*e*)	(*b*)	(*b*)
Chosen (Korea)	104,627	96,902	(*b*)	(*b*)
Philippine Islands	148	216	347	(*b*)
Africa:				
Algeria	1,048,228	1,057,087	(*b*)	(*b*)
Madagascar	(*f*)	(*f*)	(*b*)	(*b*)
Natal	50	(*b*)	(*b*)	(*b*)
Tunis	327,756	397,638	(*b*)	(*b*)
Australia	157,821	122,361	(*b*)	(*b*)

a Shipments.
b Statistics not yet available.
c Russia produced 2,936,024 long tons of pig iron in 1910, and 3,536,417 tons in 1911.
d Exports.
e Japan produced 66,131 long tons of pig iron in 1910, and 52,223 tons in 1911.
f Nearly 8 tons of iron (metal) produced in 1910, and 1.5 tons in 1911.

The iron ore mined in the United States in 1914 was estimated by the United States Geological Survey at between 41,000,000 and 42,500,000 long tons, a decrease over the production of 1913, amounting to about 33 per cent. The Lake Superior district was estimated to have shown a decrease of about 37 per cent. Iron-ore prices generally were 50 to 75 cents a ton lower than in 1913. The depression in the iron industry affected seriously the lake carrying trade, which depended largely on the transportation of ore from the Lake Superior district. During the later part of the autumn many iron mines were closed or running on half time.

PIG IRON. The production of pig iron in 1913 was 30,966,152 long tons, valued at $458,342,345, compared with 30,180,969 long tons, valued at $420,563,388 in 1912. The average price per ton in 1913 was $15.08, and in 1912 $13.93. The production of pig iron in 1912–13 by States is given in the table on page 378.

From this table it will be noted that Pennsylvania ranked first in production of pig iron, followed by Ohio, Illinois, New York, and Alabama. The relative rank of these States remained the same in 1913 as in 1912.

The whole number of furnaces in blast on Dec. 31, 1913, was 205, compared with 313 on Dec. 31, 1912. By grades the production in 1913 was as follows: Bessemer and low phosphorus, 11,590,113 tons; basic (mineral fuel), 12,536,693 tons; foundry and ferrosilicon, 5,220,343. The remainder included forge pig iron, malleable pig iron, spiegeleisen, ferromanganese, and miscellaneous. The imports of pig iron in 1913 amounted to 156,450 long tons, compared with 129,325 long tons in 1912. The United Kingdom furnished the largest quantity in both years, with Germany and Canada following in the order of importance. The exports in 1913 amounted to 277,648 long tons, compared with 272,676 long tons in 1912. The

PRODUCTION OF PIG IRON IN 1912 AND 1913, BY STATES, IN LONG TONS[a]

	1912		
State	Rank	Quantity	Percentage
Pennsylvania	1	12,552,131	42.23
Ohio	2	6,802,498	22.88
Illinois	3	2,887,859	9.71
New York	4	1,939,231	6.52
Alabama	5	1,862,681	6.27
Indiana Michigan	6	1,770,628	5.96
Missouri Colorado California	7	397,731	1.34
Tennessee	8	338,238	1.14
Wisconsin Minnesota	9	303,370	1.02
West Virginia	10	274,360	.92
Virginia	11	256,167	.86
Maryland	12	219,546	.74
Kentucky	13	68,760	.23
New Jersey	14	36,876	.12
Connecticut Massachusetts	15	17,366	.06
Georgia Texas	16	....	.....
Total	..	29,726,937	100.00

	1913		
State	Rank	Quantity	Percentage
Pennsylvania	1	12,954,936	41.84
Ohio	2	7,129,525	23.02
Illinois	3	2,927,882	9.45
New York	4	2,065,825	6.67
Alabama	5	2,057,911	6.65
Indiana Michigan	6	1,775,883	5.73
Wisconsin Minnesota	7	367,326	1.19
Virginia	8	341,815	1.10
Missouri Colorado California	9	324,263	1.05
Maryland	10	289,959	.94
Tennessee	11	280,541	.91
West Virginia	12	234,516	.76
New Jersey	13	121,795	.39
Kentucky Mississippi	14	81,215	.26
Connecticut Massachusetts	15	12,810	.04
Georgia Texas	16	....	.....
Total	..	30,966,152	100.00

[a] Bureau of statistics of the American Iron and Steel Institute.

largest quantity was shipped to Canada and important quantities were also shipped to Italy, England, Australia, Tasmania, Austria-Hungary, Belgium, and Panama.

STEEL. The total production of all kinds of steel ingots and castings in 1913 was 31,300,874 long tons. Of this, 9,545,706 tons was Bessemer, 21,599,931 tons open hearth, and 155,237 crucible and other kinds. The largest production of Bessemer steel was in Ohio, while Pennsylvania led in the production of open hearth. The production of steel by the electric process in 1913 amounted to 30,180 tons, as compared with 18,309 tons in 1912, an increase of over 64.8 per cent. See METALLURGY, section on *Iron and Steel.*

IRRIGATION. Throughout the world the year 1914 was one of comparative inactivity in the undertaking of new irrigation enterprises. This is particularly true in the western hemisphere. Another noticeable fact is that nowhere in the world is any construction of irrigation works of any magnitude being carried on by any but governmental agencies, except that in Canada by the Canadian Pacific Railway, which is subsidized by the government. The progress of irrigation development for the year 1914 is summarized in the following paragraphs.

UNITED STATES. Irrigation construction in the United States has been confined almost exclusively to projects of the United States Reclamation Service, begun in former years. While that service has been expending large sums in pushing to completion projects begun in former years, it has been devoting much more attention than formerly to the problems of settlement. The annual report for 1913 showed that but little more than one-half of the land to which the Service was ready to supply water was actually being irrigated. In addition to this, there was continual complaint on the part of settlers on the land, that they were not able to meet the payments due from them to the government. In response to these conditions Congress enacted a law extending the time of repayment under government projects to 20 years. A further provision for aiding settlers on these projects was an appropriation to the Department of Agriculture providing for the employment of agricultural advisers for settlers on reclamation projects.

The annual report of the Reclamation Service for the fiscal year ended June 30, 1914, shows the condition of the Service to be as follows: The total receipts from the sale of public lands credited to the reclamation fund up to June 30, 1914, were $81,813,772.71, and the estimated receipts for the balance of the calendar year were $2,616,000, making a total of $84,429,772.71. In addition to this, the Service had available a loan from the treasury of $20,000,000, and the receipts from repayments to the fund. The total allotment to projects was $110,209,956, and the amount expended was $91,664,628. The acreage included in projects is 2,921,165, and the service was ready to supply water for the season of 1914 to 1,343,193 acres. The acreage covered by water-right applications and rental agreements—that is, the acreage covered by some sort of agreements to take and pay for water—was 983,487 acres. The acreage irrigated in 1914 was about 750,000, an increase of 50,000 acres over the acreage irrigated in 1913. There was therefore an acreage of 359,706 acres for which water was available that was not covered by agreements, and an area of 593,193 acres for which water was available that was not irrigated. Under the Reclamation Law the cost of construction is to be returned to the reclamation fund, originally in 10 annual installments, now 20, these payments to begin on publication of notice by the Secretary of the Interior fixing the cost and the dates of repayment. Such notices have been published for only a part of the projects, the others being operated under temporary rental agreements. To June 30, 1914, the receipts from payments of building charges amounted to $3,058,459.41; those from operation and maintenance charges amounted to $1,895,827.88, while temporary water rentals amounted to $2,248,615.57.

The operations under the Carey Act (Act of Aug. 18, 1894, granting public lands to the

States on condition that they provide for their reclamation by irrigation) further indicate the lack of activity in new irrigation enterprises. During the year ended June 30, 1914, there were applications for segregations under this law covering 21,766.48 acres, there was segregated an area of 6237.70 acres, and there was patented 30,006.16 acres. From the date of the passage of the act to June 30, 1914, the acreage applied for was 7,682,445.33 acres, the acreage segregated was 3,692,230.01 acres, and the area patented was 460,054.23 acres.

The general stagnation in irrigation construction during the year has led to much discussion of possible methods of reviving irrigation development. The immediate cause of the cessation of irrigation construction is the impossibility of financing new enterprises, and most of the discussion has related to this matter. The most common proposal is the placing of the credit of the States or the Federal Government behind the securities to be sold for the purpose of raising funds. Various schemes for accomplishing this are proposed, the most common one being the guaranteeing of interest on irrigation district bonds by either the State or the Federal Government. It is also proposed that the Federal Government accept district bonds in payment of construction charges on the reclamation projects, thus releasing the reclamation fund for new projects. A Federal bond issue of $100,000,000 for new projects is also proposed. With the present condition of Federal revenues and the lack of effective demand for irrigated land it does not seem likely that any of these proposals will be realized.

The existence of large unused areas under both Federal and private projects has led to much discussion of colonization. Men without capital can not meet the financial requirements, and there is no large demand for the land from men with capital. This condition has led to much discussion of the desirability of aiding settlers and of methods of doing this. The extension of the time of payment on reclamation projects to 20 years is a step in this direction, but it is quite generally believed that the success of both Federal and private projects will require still further aid in putting settlers on the land and giving them a start. Plans for accomplishing this have not been formulated.

CANADA. The year 1914 has witnessed but little new construction in Canada. The Canadian Pacific Railway, which is doing most of the irrigation construction in Canada, is engaged largely on the problems of settlement of the lands already supplied with water. Experiments in aiding settlers have been made but without marked success so far. This aid has taken the form of selling "ready made farms" on easy terms, and the making of liberal loans for improvements on lands bought on other plans. During the year the Province of British Columbia adopted a comprehensive code of water laws based on those of some of the Western States of the United States. This code includes provisions for public control of sources of water supply and also provision for the formation of irrigation districts similar to those of the Western States.

MEXICO. The unsettled conditions in Mexico have prevented any attempt at irrigation development.

PERU. In 1913 the Peruvian government authorized a bond issue of £2,000,000 sterling, the proceeds from which are to be used exclusively for irrigation and colonization. The bonds are to run for 30 years, bear 5½ per cent interest, and may not be sold for less than 87½. The law provides that the government may do the work directly or through concessions, or may guarantee the interest on bonds issued by those holding concessions. So far the work done has consisted of investigations of various possible projects, all of which are on the coastal plain.

ARGENTINE. The Argentine government has, during the year approved several small projects, but no large development has taken place. In most cases the national government provides the funds for construction in the form of loans to the provinces, which repay them on easy terms. Projects approved during the year are to cost a little less than $2,000,000.

SPAIN. The Spanish government has authorized but little construction during the year. The most notable project is the dam on Turon River, to provide water for about 25,000 acres.

RUSSIA. The Russian government is proposing the reclamation of a tract of 8,000,000 acres in Samarkand Province, Turkestan, at a cost of $360,000,000. The object of the proposed development is the production of cotton.

EGYPT. In the last year Egypt experienced the lowest Nile in a century, and as a consequence many crops were short. The rice crop was almost a total failure. There was little new development. Plans for dams on both the Blue and the White Nile are being prepared, and it is expected that several hundred thousand acres will ultimately be reclaimed. This development has not yet begun.

SOUTH AFRICA. The government of South Africa has undertaken to aid irrigation development principally by the granting of loans to small projects. Up to 1914 it had expended $4,136,000 in this way, and the expenditures authorized for the year ending March 31, 1915, are $2,677,000. In addition the government is constructing two large projects to reclaim 35,000 and 63,000 acres respectively.

TURKEY. Work on the dams and canals for the reclamation of the valleys of the Tigris and Euphrates Rivers is being pushed forward but they are not yet completed.

INDIA. India showed greater activity in irrigation construction in 1914 than any other country. In the Punjab the great triple project, the Upper Chenab, the Upper Jehlum, and the Lower Bari canals, begun in 1912, were about two-thirds completed at the beginning of the year and it was estimated that they would be approximately completed during the year. These canals will provide for the irrigation of about 2,000,000 acres. The Upper Swat Canal in the Northwest Frontier was formally opened in April, 1914. It will irrigate about 400,000 acres. In the Bombay Presidency canals on the Upper Godaveri River irrigating about 70,000 acres were completed in 1914, and other works estimated to cost $140,000,000 are being planned and begun.

SIAM. Last year the government of Siam made a grant of $37,000 for irrigation studies, and the budget for 1914–15 provides $362,230 for the establishment of a regular irrigation department. The works to be built have not yet been decided upon.

AUSTRALIA. The Commonwealth and the

States have agreed upon a scheme for improving the Murray River at a cost of $25,000,000, to be shared by the Commonwealth and the States. It is estimated that this will provide for the irrigation of 1,500,000 acres, in addition to making the river navigable. In New South Wales the Burrinjuck dam is nearing completion and the government is investigating the feasibility of a similar project on the Clarence and Mitchell Rivers. In Victoria the irrigation work of the year has consisted principally in settling the areas already supplied with water. Further construction is proposed but has not yet been taken up.

IRVING, LAURENCE SYDNEY BRODRIBB. An English actor and playwright, died May 30, 1914. He was the second son of the famous actor, Sir Henry Irving, was educated at Marlborough College, and at the Collège Rollin, Paris, and afterward spent three years in Russia, studying for the Foreign Office. His first appearance on the stage was made at Dundee in 1893 with Benson's Shakespearean Company. From 1894 to 1896 he was associated with J. L. Toole, and after various other engagements he joined his father's company of players from 1900 to 1904. In the following year with his wife he appeared with his own company, creating the part of "Crawshay" in *Raffles.* In 1908–09 he produced several plays in the United States and England. He undertook the management of the Garrick Theatre in 1910, producing *The Unwritten Law.* This was followed by tours in the United States and other countries. Mr. Irving perished with his wife in the sinking of the steamship *Empress of Ireland* in a collision with the collier *Storstad* in the St. Lawrence River on May 30, 1914. His published writings include: *Peter the Great; Bonnie Dundee; Translations of Sardou's Robespierre; Dante; Maxim Gorki's The Lower Depths; Richard Lovelace; The Unwritten Law; The Terrorist; The Phœnix;* and *The Typhoon,* all plays. Although Mr. Irving never attained the distinction of his father, he was well and favorably known as an actor in the United States and England.

IRWIN, AGNES. An American educator, died Dec. 5, 1914. She was born in Washington, D. C., in 1841, and was educated in private schools. She conducted private schools in New York and Philadelphia until 1894, when she was elected dean of Radcliffe College, serving in that position until 1909. In 1900 she was commissioner from Massachusetts to the Paris Exposition, and she served also as commissioner for that State on the adult blind. She received the degrees of Litt.D. from the University of Pennsylvania, and LL.D. from St. Andrew's University.

ISHAM, SAMUEL. American artist and art critic, died June 12, 1914. He was born in New York City in 1855, and graduated from Yale in 1875. His art education was obtained in Paris, where he began to study in 1883. He returned to the United States in 1887 and followed his profession in New York City. He was a figure painter, and his picture which has probably been exhibited most often is "In the Park," which won the silver medal at the St. Louis Exposition in 1904. He also exhibited "The Apple of Discord" at the Pan-American Exposition in Buffalo. Mr. Isham was perhaps better known as a critic and writer on art subjects, than as an artist. His *History of American Painting* is a work of great importance. He was also an authority on, and a collector of, old Japanese color prints, and was a member of many art and literary societies.

ISOSTASY. See GEOLOGY.

ITALIAN LITERATURE. A glance at the continuous output of Italian literature in 1914, which the crisis of August checked for a moment, but only for a moment, presents the Italian mind still occupied with what have been its main concerns for the past decades: the interpretation of regional life, particularly in the short story, makes up its most characteristic feature; while the national spirit, which seeks the common bonds between Italy's divergent regional tempers, continues to exploit the memories of the past and the actual problems of faith and the Church in relation to contemporary life. If one asks why Italian literature exerts at present a relatively slight international influence, the answer is doubtless to be found in these facts. For Italy is still concerned preeminently with the consolidation of its own national consciousness—distinctly a national and local concern.

A positive action upon European and American thought—if we exclude futurism, in Marinetti, Buzzi, and their followers, and journalism, which in Guglielmo Ferrero still extends to social criticism the methods of Lombroso—appears from Italian literature only in the critical school of Benedetto Croce. The *Estetica* of Croce is now 14 years old. That in this interval Croce's revival of Vichian æsthetics has profoundly affected Italian criticism and even Italian education there can be no dispute. To be sure the positivistic school that centres vigorously around the *Giornale storico della letteratura italiana,* edited from Turin by Ridolfo Renier, has lost little of its prestige, so deeply does the study of the past for its own sake answer, as we said above, one of the strong tendencies of growing Italian nationalism. It is rather that historical criticism has been forced into a new consciousness of its purposes and *raison d'être.* Without Croce we may say that such a critic as Guglielmo Borgese, who writes regularly in the *Corriere della sera* (one of the most important European dailies, edited from Milan), and who directs the *Nuova Cultura* (Turin), could not have developed his incisive method or found such a wide audience. Croce's influence at home has not, moreover, depended on his followers alone. His monthly *Critica* (Bari) has set for itself the task of applying the Vichian principles, as criticised and elaborated by Croce, to the interpretation particularly of Italian literature and Italian thought of the nineteenth and twentieth centuries. Croce's own articles, forming a remarkable body of essays, have just been collected and published at Bari (*Saggi di letteratura italiana*). We may note in passing that an incidental tendency of the Crocian movement, explained by his Neapolitan origin without doubt, is to stress perhaps to excess the product of Southern Italy, both in literature and philosophy. Nevertheless such an imposing series as the *Scrittori d'Italia,* ultimately to reach 600 volumes, testifies to the broad outlook of Croce himself. Philosophically the Crocians have strenuously revindicated idealism of the Hegelian type against nineteenth-century empiricism. There was a chance that in the Florentine group of pragmatists, headed by Pannini, a new movement of Italian thought, independent of all the older traditions, might arise. But in 1914 Pannini seems to have been swept away from careful study into the vortex of the propaganda for the *new nationalism*. Croce, meanwhile, can look with complacency upon a considerable following in Germany, England, and America; nor has his thought been entirely without effect upon the French syndicalists. Consult L. Tonelli, *La critica letteraria negli ultimi cinquant' anni* (Bari, Laterza).

The Italian public is continually exercised over the small universal significance of its literary production. Perhaps nowhere is so much artificial stimulus offered for excellent work. Yet oftentimes, as in the case of the prizes announced by the Società Drammatica of Rome, awards are withheld for lack of worthy presentments. The theatre, in fact, is a subject of special concern at present. For work of the first order one still has to depend on Roberto Bracco, who is rehearsing a new play, *La principessa;* on revivals of E. A. Butti, deceased in 1907; on Arturo Venturi and Giannino Antona-Traversi (who represent, with debatable literary value, the best stage-sense of the average contemporaries); even on Sem Benelli, who, after selling out his old stock to the "movies," is likewise threatening another historical novelty. Pirandello has written *Se non così* and *Il piacere dell' onestà*, D'Annunzio an *Amaranta*, while Amelia Rosselli has added to her list another delightful Venetian drama, *San Marco*. To elevate the tone of the stage the city council of Rome voted in February the sum of $5000 for the Argentina theatre, and the maintenance of a permanent stock-company of the best actors. It will be interesting to watch whether this attempt will ultimately bring forth an Italian national theatre comparable at all to the Comédie Française. Rome, of course, is far from representing to Italy what Paris does to France. The problem rather takes the form of establishing a series of communal subsidized theatres. A well-defined propaganda is on foot in this direction, taking as its point of attack the star-system in the formation of companies, which prevents evenly balanced productions and the development of beginners of genius, and the tour system of presentation, which rests on the economic considerations only and tends to neglect the best classic materials as well as serious efforts of new authors not aimed essentially at popularity. A fine idea of the problems of the contemporary theatre in Italy as well as their history may be found in the new memoirs of Antonio Salsilli, *Tra un atto e l'altro* (Palermo, Sandron).

For the short story and novel let us mention simply the names of some of the most typical writers: Alfredo Baccelli (*La via della luce*), Gino Maffei (*Signora vita'*), Giuseppe Lipparini (*La vista pastorale*), Virgilio Brocchi (*Il laberinto*), Rina Maria Pierazzi (*L'inutile attesa*), Gino Ricchi (*Sorrisi*), Cesare Schiapperelli (*Novelle strambe*), and Ferruccio Luppis (*La ruota*); noting, however, the indefatigable activity of Grazia Deledda (*Le c'alpe altrui*) and passing over with some regret the representative tales of Roberto Bracco's *La favola e la vita*. For it is in the surprisingly rich output of verse during 1914 that one seems to get most closely in touch with the intimate pulse-beat of Italian aspiration. Read the *Dominante* of Apartaco Myratti: typical of the backward outlook of the Italian middle class, for here he reflects the delusion of a woman's sensualistic life on the background of the fall of Venice. And the same fascination of the past for the younger generation appears in the *Inni alle navi* of Giacomo Bulgarelli. For the reflection of regional life, we have the Sardinian poems of Sebastiano Satta, and more important still, in their inevitable suggestion of Fucini's best manner, the Pisan sonnets of Giuseppe d'Angiolo. The Modenese dialect is turned in *I mée rechiem eterna* of E. Stuffler to a more personal poetry over which broods the melancholy of death; while from the region of Rome, the poems of Trilussa, in their new edition, are assuming almost the scope of Belli's work. Does Italian middle class life, meanwhile, offer only delusion to its most sensitive spirits? The poetic personality of Rosmunda Tomei Finamore is now becoming well defined. Through her earlier work ran a vein of bitterness and sarcasm. In her new *Rime sentimentali* experience has shown her that life "after a brief period of illusion offers nothing but devastation and sorrow"—which she expresses in a splendid *Francescana*, parodying the *Laudes creaturarum* of Saint Francis. Disillusion, too, informs the *Eliotropia* of Eugenio Treves, saved perhaps by a humorous resignation that seeks the title of the new poems in the humor of Boccaccio. Disillusion again in the *Carmi della città d'oro* of Paride Chistone, who does indeed seek poetry in gayer subjects, but who finds it only in the sadness of *Mimì e Cecesco*. Disillusion ungarnished finally in the *Lenta Viburna* of Ariele Callofilo and only to a less extent in the *Parole* of Antonio del Mastro. The trouble is that not only in verse does this spirit reveal itself. Unmitigated despair breathes from the *Novelle napolitane* of Salvatore di Giacomo, and similar is the mood predominant in most of the analytic studies of popular life. In the past men like Butti and Fogazzaro have sought relief from this in Catholic idealism; Carducci and D'Annunzio in the sensuousness of the Hellenic spirit or in patriotism. It is clear, nevertheless, that in spite of all recent history the romantic virus in Italy runs deep; and if new ideals have appeared at all, they are found, and inarticulate at that, among the futurists.

ITALIAN SOMALILAND. An Italian colony and protectorate in northeast Africa. Area, 365,400 square kilometers, or 141,081 square miles. Estimated population, 300,000. Imports 1912, 5,533,462 lire; exports, 2,055,018. Budget 1912–13, 6,534,856 lire. Mogadisho is the headquarters.

ITALY. A constitutional monarchy of southern Europe, including the Apennine Peninsula, the islands of Sicily, Sardinia, Elba, and about 66 minor islands. Capital, Rome.

Area and Population. The compartimenti composing the kingdom, the number of provinces in each compartimento, the area in square kilometers, and the *de facto* population, Feb. 10, 1901, and June 10, 1911, are given in the table below:

	P	*Sq. km.*	*1901*	*1911*
Piedmont	4	29,867	3,317,401	8,424,450
Liguria	2	5,278	1,077,473	1,197,231
Lombardy	8	24,085	4,282,728	4,790,473
Venetia	8	24,547	8,134,467	8,527,860
Emilia	8	20,701	2,445,085	2,681,201

	P	Sq. km.	1901	1911
Tuscany	8	24,105	2,549,142	2,694,706
The Marches ..	4	9,712	1,060,755	1,093,253
Umbria	1	9,709	667,210	686,596
Rome	1	12,081	1,196,909	1,302,424
Abruzzie Molise.	4	16,529	1,441,551	1,430,706
Campania	5	16,295	3,160,448	3,311,990
Apulia	3	19,109	1,959,668	2,130,151
Basilicata	1	9,962	490,705	474,021
Calabria	3	15,075	1,370,208	1,402,151
Sicily	7	25,789	3,529,799	3,672,258
Sardinia	2	24,109	791,754	852,407
Total 69		286,682*	32,475,253	34,671,377

* 110,688 square miles.

The total *de jure* population in 1911 was 35,845,048. As calculated Jan. 1, 1913, the total *de facto* population was 35,238,997, a density of 318.8 per square mile. The population returned as over 15 years of age in 1911, numbered 22,817,755, of whom 8,039,129 were unmarried, 12,613,993 married, 2,147,325 widowed, and 17,308 unascertained. The census of 1901 returned 9,611,003 persons over nine years of age as engaged in agriculture and allied industries. Of the population in 1901, 97.12 per cent were Roman Catholics. The number of marriages in 1912 was 264,674, living births 1,133,985, stillbirths 47,568, deaths exclusive of the stillborn, 635,788. Emigrants in 1912 numbered 711,446, of whom 403,306 went over seas and 308,140 to Europe and other countries by way of the Mediterranean. The communal population of Naples in 1911 was 678,031, Milan 599,200, Rome 542,123, Turin 427,106, Palermo 341,088, Genoa 272,222, Florence 232,860, Catania 210,703, Bologna 172,628, Venice 160,719, Messina 126,557, Leghorn 105,315, Bari 103,670, Padua 96,230, Ferrara 95,212, Brescia 83,338, Verona 81,909.

EDUCATION. Two grades of elementary education are provided, both of which are free, the lower only (ages 6 to 9 in communes where no higher schools exist, 6 to 12 where there are such schools) being compulsory. There has been great improvement subsequent to the law of July, 1904, imposing special disabilities on the illiterate. The number of public primary schools, exclusive of infant, numbered 61,497 in 1907–08, with 61,944 teachers and 3,002,168 pupils; private, 6534, with 8130 teachers and 148,081 pupils. There are secondary schools, numerous special, professional, technical, and industrial schools and colleges. There are 17 State universities, and 4 free, with an aggregate attendance in 1911–12 of 21,615 students.

PRODUCTION. Of the total area 70.6 per cent is productive. The soil is exceedingly fertile, and cereals, wines, olives, olive oil, citrous, and other fruits, with root and industrial crops, are produced in abundance. In the table below are shown principal crops, with area planted in hectares, and production in quintals for two years, with yield per hectare in 1913–14:

	Hectares		Quintals		Qs.
	1912-13	1913-14	1912-13	1913-14	ha.
Wheat	4,792,200	4,768,500	58,352,000	46,115,000	12.2
Rye	124,100	122,500	1,419,800	1,386,000	11.4
Barley	250,000	246,800	2,352,000	1,506,000	11.4
Oats	506,200	491,000	6,309,500	8,894,000	12.5
Corn	1,578,600	1,500,000	27,582,000	26,000,000	17.5
Rice	146,400	146,000	5,482,000	5,482,000	37.1
Flax*	18,000	18,000	108,000	80,000	5.7
Beets	56,700	40,000	27,300	14,000,000	481.5
Vines†	4,357,700	4,358,000	52,240,000	46,000,000	12.0
Tobacco	8,500	8,000	85,000	....	10.0
Olives†	2,291,100	2,390,000	1,742,000	1,700,000	0.8

* Production of seed; fibre production was 25,000 qs. in 1913-14. † Production in hectoliters.

Sericulture is carried on throughout the country, particularly in Piedmont and Lombardy. The quantity of eggs placed for hatching in 1913 was 300,000 hectograms, producing 32,000,000 kilograms of cocoons.

Live stock 1908: 849,723 horses; 388,337 mules; 6,198,861 cattle; 11,162,926 sheep; 2,714,878 goats; 2,507,798 swine; 19,266 buffaloes. The total forest area, exclusive of chestnut plantations is about 4,000,000 hectares, and in 1909 the value of the forest products was reported at 124,132,000 lire. The department of forestry was reorganized June 2, 1910, under a director-general of forests. The output of chemical industries was valued in 1912 at 181,000,000 lire. The total number of industrial establishments returned by the census of June 10, 1911, was 243,985, with 2,305,698 employees, and 1,573,774 aggregate horsepower. In the table below are shown productive mines in operation in 1912, the operatives employed, output in metric tons, and value in lire.

	No.	Workers	M. tons	Lire
Iron	27	1,780	582,066	12,406,837
Manganese ...	5	121	2,641	99,160
Copper	7	798	86,001	1,588,921
Zinc	94	14,797	149,776	18,286,272
Lead			41,680	7,785,269
Lead and zinc			300	5,400
Silver	1	68	27	77,200
Gold	2	78	2,866	66,356
Antimony, arg..	3	294	1,878	112,245
Mercury	8	945	88,200	4,370,400
F. & C. pyrites	11	2,400	277,585	5,966,819
Mineral fuel ..	42	3,927	663,812	6,111,004
Sulphur ore ..	358	17,226	2,504,408	29,600,684
Asphalt & bit..	18	1,784	181,946	3,012,348
Boric acid ...	7	464	2,809	900,510
Total	656	46,064	.....	94,218,223

There were 70,914 persons employed in the quarries in 1912; total value of output, 64,258,333 lire. Employed in lime and brick kilns, 106,730 persons; value of output, 189,211,416 lire.

In the fishing industry 28,402 boats, with a tonnage of 78,981 were employed Dec. 31, 1911; persons engaged, 127,792; value of total catch in home waters, 24,265,000 lire, of which 4,111,000 lire from the tunny fisheries and 75,320 from coral fisheries.

COMMERCE. The totals for three years of imports for consumption and exports of domestic produce, merchandise, with the countries of origin and destination and the value of their trade, are shown below in thousands of lire:

	Imports			Exports		
	1910	1911	1912	1910	1911	1912
A	476,269	509,881	577,130	210,856	222,797	264,406
B	10,011	9,500	7,640	4,965	2,719	2,525
C	97,976	108,805	150,405	151,461	166,194	182,111
D	18,295	22,298	40,523	8,401	10,557	12,838
E	289,746	288,914	294,479	164,581	184,754	219,191
F	84,809	82,027	84,628	51,458	51,865	74,648
G	42,456	50,308	64,345	31,335	42,597	56,481

	Imports			Exports		
	1910	*1911*	*1912*	*1910*	*1911*	*1912*
H	159,199	172,280	140,899	36,798	31,924	37,879
I	3,364	478	519	680	170	164
J	2,497	3,490	7,177	4,638	7,134	10,579
K	9,804	10,062	13,545	1,574	2,580	7,156
L	690	696	1,328	4,126	3,603	3,415
M	3,318	3,897	4,143	4,307	6,158	5,542
N	15,206	16,477	17,570	15,654	21,773	19,845
O	60,976	54,029	55,284	9,180	6,423	8,068
P	1,748	2,189	2,468	3,404	4,020	4,828
Q	800	2,450	5,873	2,580	3,360	4,153
R	5,426	9,410	7,924	3,995	10,207	10,248
S	35,139	41,516	24,880	44,783	60,936	42,471
T	1,880	3,871	5,461	3,120	10,895	12,469
U	333,957	327,182	289,591	218,296	206,168	222,570
V	524,634	550,159	626,284	293,139	301,249	328,236
W	6,719	5,876	11,314	11,303	36,780	16,299
X	32,968	34,709	24,195	15,367	19,853	19,383
Y	28,878	31,280	47,621	2,489	2,081	3,687
Z	1,199	1,299	1,246	7,061	6,069	6,808
AA	582	3,976	1,576	7,414	4,572	4,604
AB	2,299	3,582	7,495	868	1,310	2,027
AC	14,581	16,447	28,390	2,798	3,912	3,672
AD	925	1,805	107	5,195	7,481	6,958
AE	5,626	6,257	7,690	7,250	7,545	11,460
AF	82,149	120,944	169,856	15,070	23,448	25,800
AG	265,001	284,781	214,902	50,649	50,866	55,931
AH	17,075	11,048	7,231	2,667	2,667	2,644
AI	30,586	29,887	34,524	11,902	16,480	15,399
AJ	12,959	14,791	15,172	5,343	5,640	14,729
AK	3,284	3,089	2,662	2,792	4,019	5,002
AL	83,916	77,641	84,708	216,396	208,598	218,910
AM	3,288	1,578	6,102	4,861	24,739	100,778
AN	25,169	22,531	25,748	8,004	9,459	12,589
AO	19,765	19,861	11,756	43,497	44,140	3,798
AP	37,314	34,360	10,452	64,368	51,838	2,718
AQ	362,968	415,280	515,347	263,816	247,230	261,938
AR	2,539	4,335	9,554	16,029	22,305	28,581
AS	28,591	27,637	48,238	41,522	51,313	48,409
Total	3,245,976	3,389,298	3,701,922	2,079,977	2,204,278	2,396,927

A, United Kingdom; B, Algeria; C, Argentine Republic; D, Commonwealth of Australia; E, Austria-Hungary; F, Belgium; G, Brazil; H, British India and Ceylon; I, British West Indies; J, Bulgaria; K, Canada; L, Crete; M, Central American States; N, Chile; O, China, including Hongkong; P, Cuba and Porto Rico; R, Dutch East Indies; S, Egypt; T, Eritrea; U, France; V, Germany; W, Greece; X, Netherlands; Y, Japan; Z, Malta; AA, Mexico, AB, Morocco; AC, Norway; AD, Peru; AE, Portugal; AF, Rumania; AG, Russia in Europe; AH, Servia; AI, Spain; AJ, Straits Settlements and Aden; AK, Sweden; AL, Switzerland; AM, Tripoli; AN, Tunis; AO, Turkey in Asia; AP, Turkey in Europe; AQ, United States; AR, Uruguay; AS, other countries.

In thousands of lire are given in the table below some details of the special trade for the year 1912:

Imports	*1000 lire*	*Exports*	*1000 lire*
Wheat	399,737	Raw silk	364,190
Coal and coke	362,060	Cotton mfrs.	158,922
Raw cotton	342,627	Silk mfrs.	103,762
Machinery	98,302	Olive oil	57,093
Timber	134,874	Wines	73,809
Raw silk	44,055	Cheese	79,140
Pig iron	26,736	Dried fruits	130,826
Wool	24,840	Hemp (raw)	51,781
Coffee	48,347	Hides	48,431
Instruments	68,776	Eggs	48,400
Hides	130,285	Sulphur	39,080
Oats	29,081	Flour	22,193
Horses	29,944	Pulp of wheat	32,547
Silk mfrs.	48,252	Yarn, etc.	32,657
Fish (dried)	43,884	Hair	14,989
Fish (in oil)	11,828	Automobiles	35,896
Silk cocoons	44,055	Fresh vegetables	19,569
Woolen mfrs.	53,768	Straw hats	14,091
Ships and boats	14,188	Marble, etc.	40,343
Scrap iron, etc.	30,936	Rice (cleaned)	35,202
Tobacco	34,559	Worked coral	19,381
Oil seed	35,057	Straw plaiting	3,413
Copper, etc.	60,535	Poultry	15,183
Petroleum	16,985	Felt hats	28,915

The total transit trade amounted to 77,878,000 lire in 1910, and 78,754,000 in 1911. Imports of precious metals in 1910 amounted to 31,065,700 lire; in 1911, to 28,896,500; in 1912, to 25,906,000—making the total imports for the three years 3,277,041,661, 3,418,194,053, and 3,727,828,000 lire, respectively. Exports of precious metals amounted to 48,116,400 lire in 1910, 42,091,700 in 1911, 41,475,000 in 1912—making the total exports for three years 2,128,093,776, 2,246,365,199, and 2,438,402,000 lire, respectively.

The total number of vessels entered at Italian ports in the 1911 trade was 173,437, of 56,056,306 tons, of which 159,647 vessels, of 35,924,881 tons, were Italian; cleared, 173,353, of 56,082,448 tons, of which 159,552, of 35,945,206 tons, were Italian. The merchant marine included Jan. 1, 1912, 757 steamers, of 696,994 tons, and 4713 sailing, of 410,991 tons; a total of 5470 vessels, of 1,107,985 tons.

COMMUNICATIONS. Open for traffic March 1, 1913, were 17,634 kilometers of railway, 13,769 operated by the State. Tramways in operation, 5150 kilometers. The Italian State railways in 1914 placed contracts aggregating $10,446,974 with 17 Italian firms for 885 baggage and passenger cars, and 4481 freight cars. In Sicily the State-owned railway system has a total length of 839 miles, all standard gauge except the 46 miles of 3-foot 1-inch gauge. Train service is also maintained across the Straits of Messina, a distance of 14 miles. The Turin-Savona Railway during 1914 inaugurated electric operation for passenger traffic on the section of the line across the Apennines between Savona and Cera, a distance of 29 miles, which is the heaviest part of the line, including the Belbo tunnel, about 3 miles in length, with maximum grades of 2.5 per cent. The maximum speed is 31 miles per hour. During the year 34 new 3000-volt, 3-phase, 16⅔-cycle locomotives were ordered for the electrically equipped sections of the Italian State Railways, which were in course of extension. These motors were designed to develop

1300-horsepower each, at 45 miles an hour, and by various connections, economical speeds were obtained at 22, 30, 45, and 60 miles an hour. There were in operation June 30, 1911, 51,172 kilometers of telegraph lines, and 311,584 of wires; State telegraph stations numbered 5874, and railway and other stations 1994. There were 20 wireless stations, and 125 on board vessels. The urban telephone system had 12,089 kilometers of lines, and 192,838 of wires; interurban lines had a total length of 31,354 kilometers, with 60,905 of wires. Post offices numbered 10,238 in 1911.

Finance. The monetary unit is the lira, par value 19.295 cents. Revenue and expenditure for three years are shown below in lire, 1912–13 being provisional only:

	1910-11	*1911-12*	*1912-13*
Revenue	..2,883,164,212	2,682,640,878	2,698,620,121
Expend.	..2,753,625,048	2,628,425,632	2,615,208,705

In the table below are shown in thousands of lire the details of the budget for the year ending June 30, 1914:

Revenue	*1000 l.*	*Expend.*	*1000 l.*
Real property.	12,880	Treasury	688,625
Railways	39,225	Finance	828,269
Various	4,086	Justice	55,476
Land tax ...	81,800	Foreign Affairs.	25,156
Income tax ..	313,000	Instruction	137,634
House tax ..	106,000	Interior	182,990
Succession ...	48,000	Public Works ..	58,215
Registration ..	96,500	Posts & Tels....	132,198
Stamps	85,000	War	363,652
Traffic	40,350	Marine	226,707
Various	64,900	Agriculture, etc..	27,735
Excise	210,200		
Customs	266,700	Total ordinary.	2,126,662
Octrois	122,092		
Tobacco	327,030	*Extraordinary:*	
Salt	89,000	Treasury	229,821
Lotteries	106,000	Finance	3,828
Quinine	2,700	Justice	203
Posts	122,000	Foreign Affairs.	603
Tels. & Tels..	40,800	Instruction	8,111
Repayments .	87,265	Interior	4,718
Various	68,739	Public Works...	144,010
Virements ...	64,064	Posts & Tels....	5,526
		War	60,677
		Marine	30,028
Total ordinary	2,397,783	Agriculture, etc..	7,245
Extraordinary	198,801	Total	2,620,937
Total .	2,656,995		

The nominal capital of the consolidated and redeemable debt stood at 13,429,361,597 lire, July 1, 1912, and the interest amounted to 451,085,681. The interest, including premium of the total public debt, 1912–13, was 523,084,574; sinking fund, 1,921,047. The total estimated value of State properties, including funds in treasury, was 8,070,563,526 lire, June 30, 1911.

Army. While the Italian army was not actually engaged in war during the year 1914, yet it was believed that a crisis was impending and the effective strength was increased, and the army was mobilized, looking towards its extension on a war basis. The Italian army in 1914 was organized in 12 corps, each of two divisions, and the first line was estimated to consist of 310,000 men available. In addition there was maintained a considerable active reserve and a mobile militia. Military service in Italy was compulsory by the terms of the law of June 30, 1910, and extends from the twentieth to the thirty-ninth year. The service consists of two years in the active army for those actually called to the colors, while the second class spend a shorter time, practically but a few months, while the third are allowed to go on unlimited leave. Those free from service in the permanent army are enrolled in the mobile militia, and are called out from time to time for instruction. The territorial militia is made up of others available for service and a limited amount of training is given them. For the mobile militia there existed cadres for 75 regiments of infantry and 23 Alpine battalions, so that the various regiments could be readily raised to full strength. The number of squadrons of cavalry and battalions of artillery in the militia had not been formally decided on, as was the case with other arms of the service. For the territorial militia, 324 battalions of infantry were contemplated, and 75 Alpine companies forming 26 battalions, as well as 100 companies of coast and fortification artillery and 30 companies of engineers. Inasmuch as the Italian army was mobilized and greatly augmented in 1914 its organization on a war basis is of interest. This scheme contemplated four armies, each composed of 2, 3, or 4 army corps, 1 division of cavalry, 2 or 3 companies of sappers and miners and pontoon troops with their equipment, 1 aëronautical section, 1 park of artillery, 1 park of engineers, the field hospital, and other technical troops. There would be 12 army corps, each comprising 2 divisions and eventually 1 division of the mobile militia, 1 regiment of bersaglieri, of which the fourth battalion were to be cyclists, 1 regiment of cavalry, 1 regiment of artillery, 1 company of telegraphers, 1 park of artillery, and various technical and other troops, making the effective strength of an army corps 50,062 men, 6330 horses and 126 guns. The infantry accordingly would form 24 active divisions with 12 from the mobile militia, each division comprising 2 brigades of infantry, 1 regiment of artillery, and 1 company of sappers, 1 ammunition column and medical and subsistence troops, while the divisions of the militia would include in addition 1 or 2 battalions of bersaglieri, 2 or 3 squadrons of cavalry, and its artillery would be organized in two sections. Accordingly the effective strength of an active division would be on a war footing, 14,156 men, 1399 horses, and 30 or 36 guns; the three divisions of independent cavalry would each comprise 2 brigades of 2 regiments, 1 group of horse artillery of 2 battalions, 1 cyclist battalion, 1 park of artillery, and section of medical and subsistence troops, making an effective of 4138 men, 4165 horses, and 12 guns. The three groups of Alpine troops include in the active Alpine battalions, the companies of the mobile militia and the battalions of the territorial militia with the guns. The militia are incorporated within the battalions of active Alpine troops which include 3, 4, or 5 companies. The figures for the mobilization of Italy in 1914 as in the case of the other nations were not available, and any statement of the strength is more or less a conjecture. The effective strength of the army including the forces actually mobilizable were authoritatively estimated as follows before the outbreak of the European War, and the mobilization: Permanent army first line actually under arms 250,000 men, including the permanent cadres, 2 classes, on leave 550,000 men, in 7 classes, in the second line or mobile militia 350,000 men, in 4 classes, in the third line or territorial militia 500,000 men, in 6 classes.

NAVY. The number and displacement April 1, 1914, of warships built of 1500 or more tons, and of torpedo craft of 50 tons and over, were as follows: 3 battleships (dreadnought type), having a main battery of all big guns, 11 inches or more in calibre, of 62,644 tons (and 7, of 187,150 tons estimated, building); 8 battleships (predreadnought type), of 96,100; 9 armored cruisers, of 74,020; 6 cruisers, of 18,830 tons (and 2, of 4888 tons, building); 36 torpedo-boat destroyers of 16,807 tons (and 15, of 14,203 tons, building); 68 torpedo boats of 11,584 tons (and 2, of 272 tons, building); 19 submarines, of 5475 tons (and 8, of 5842 tons, building)—a total tonnage built of 285,460, and 212,355 building, making a total tonnage built and building of 497,815. Excluded from the foregoing are ships over 20 years old, unless reconstructed and rearmed within 5 years; torpedo craft over 15 years old; transports, colliers, repair ships, torpedo-depot ships, and other auxiliaries. The Italian navy classes armored cruisers as battleships. The authorized personnel is 40,063. The programme projected in 1914 contemplated the completion by 1916 of dreadnoughts to make a total of 10 in commission.

GOVERNMENT. The King (1914, Victor Emmanuel III) is the executive, acting through a responsible council of 11 ministers. The legislative authority is vested conjointly in the King and a Parliament composed of a Senate of 318 members, and a Chamber of Deputies of 508. The King is required to convoke Parliament annually, but may dissolve it at will. Heir-apparent, Prince Humbert, born Sept. 15, 1904. The ministry, as constituted March 24, 1914, is given in the paragraph on *History*.

HISTORY

THE CABINET CRISIS IN MARCH. A storm of hostile criticism greeted the Finance Bill which the Giolitti ministry submitted to the Chamber on February 3. The dissatisfaction was caused chiefly by the fact that the Finance Bill contained a number of new taxes—taxes on cinematograph exhibitions, taxes on bottled mineral waters, a higher tax on motor vehicles, and readjustments of the succession and stamp duties—calculated altogether to increase the revenue by 47,000,000 lire. The burden of taxation had been made enormously heavier, as the whole country knew, by the expenses incurred in the occupation of Libya, which had reached the figure of 1,150,000,000 lire by the end of 1913, and by the additional expenditure upon armament necessitated by Italy's enhanced importance as a Mediterranean Power. Four new dreadnoughts designed by Signor Feretti were to be completed by 1916, and after that one capital ship a year was to be constructed up to 1921. But paying for these gratifications of Italy's national pride was a decidedly disagreeable matter. The difficulty was further increased by the division of opinion in the cabinet as to how the new taxation should be distributed. The Radical members of the cabinet, Signor Sacchi and Signor Credaro, already at variance with the premier on other questions of social policy, seized this occasion to present their resignations. The revolt of the Radical members of the ministry synchronized with the declaration of a general strike in Rome. Realizing the weakness of his position, and foreseeing, perhaps, that he could only injure his own prestige by attempting to remain in power, Signor Giolitti on March 10 tendered to the King the collective resignation of his cabinet. Baron Sonnino refused to take up the reins of government which Giolitti had let fall. Signor Salandra, however, undertook and accomplished the delicate task of forming a cabinet representative of all parties except the Clericals. The constitution of the cabinet was as follows: Premier and minister of the interior, Salandra; foreign affairs, Marquis di San Giuliano; colonies, Martini; justice, Daneo; public works, Rava; treasury, Rubini; agriculture, Dari; public instruction, Fusinato; finance, Ciuffelli; posts and telegraphs, Riccio; marine, Rear Admiral Millo; war, General Grandi. The new ministry presented itself before the Chamber on April 2. In point of policy the Salandra ministry appeared to differ but little from its predecessor, and declared its adherence to most of Signor Giolitti's programme. In discussing the unfavorable financial situation, the premier announced that in order to relieve the present tension, Treasury bonds to the amount of $10,000,000 would be put into circulation. The vote of confidence was passed by 303 to 122. On May 7 the government embodied its financial proposals in a bill to increase the succession duties, as well as the taxes on theatres, mineral water, motor cycles, promissory notes, and revolver licenses. These, together with an increased excise tax on spirits and tobacco, were expected to bring in about $20,000,000. So obstinate was the opposition which the Socialists offered to these proposals, that when the Parliament rose for the summer vacation in July, the budget had not yet been voted and the new taxes were still unauthorized. Signor Salandra, however, was not thus easily to be thwarted. By provisionally promulgating the new taxes, without Parliamentary authorization, he obtained the desired augmentation of the public revenues and rendered nugatory the obstruction which the Socialists had so assiduously practiced.

ANTIMILITARISM AT ANCONA. Antimilitarism in Italy was intimately bound up with the industrial agitation of the laboring classes, and led during the course of the year to violent conflicts between the government and the partisans of a social revolution. The temper of the Italian Socialists was demonstrated in January when the fourth constituency of Milan elected to Parliament Sr. Amilcar Cipriano, a zealous advocate of violent revolution, who forty years previously had been convicted of manslaughter. Throughout the spring the government had been constantly threatened with a general strike on the part of the railway employees. The trial of strength did not come until June, however. June 7, the national holiday, had been fixed as the day for general antimilitarist demonstrations throughout Italy. The government had prohibited the holding of such demonstrations. At Ancona, in defiance of the government's prohibition, a demonstration was nevertheless organized, and resulted in a clash with the police, who fired into the mob, killing two and wounding four persons. In protest against the action of the police, a general strike was declared at Ancona. Socialists and Syndicalists in other cities likewise went on strike. For a day or two there seemed to be some danger of a concerted revolutionary movement of the organized laboring classes which would overturn the government and the social order. In several places "the Republic" was proclaimed. Strikers and police frequently came to blows, and the police were not always the victors. But starting in Venice and in Rome a reaction set in against the strike, and the government exerted itself powerfully to restore order, with the result that the general strike was brought to an end on the night of June 10. Administrative elections held a fortnight later resulted in a defeat for the Socialists at Florence, Pavia, Bergamo, Brescia, and Savona, although at Bologna the Socialists carried the day. In July the determination of the government to punish the 15,000 employees of the State railways who had participated in the revolutionary movement of June 8, 9, 10, precipitated a new crisis, and the government called the reserves of the class of 1891 to the colors in anticipation of a railway strike. For further details in regard to the Italian strikes, consult the article on STRIKES.

CHANGES IN THE SALANDRA CABINET. With the reasons for Italy's refusal to join Germany and Austria-Hungary in the war against the Triple Entente, the article on the WAR OF THE NATIONS deals in detail. In this place it remains to remark that the war, and the possibility of Italy's entering into the conflict, so intensified the controversial questions of militarism and finance that Premier Salandra found it necessary to make several changes in the constitution of his cabinet. In the first place a quarrel arose between the minister of war, General Grandi, and the new chief of the general staff, General Cadorna, because the minister would not agree to the costly military reforms which General Cadorna regarded as absolutely essential. Early in October the cause of military preparedness triumphed, and General Grandi was superseded by General Zupelli, a veteran of the Tripolitan war, and a sympathizer of General Cadorna's. A cabinet council on October 9 authorized the expenditure of $11,360,000 to keep the reservists with the colors up to December 31; $8,994,756 for warlike preparations due to the war situation; $9,200,000 for winter equipment and stores; $1,500,000 to increase the garrisons in Libya and the Ægean Islands by 30,000 men; $900,000 for the purchase of motor wagons for the army; $1,154,400 for the mobilization of the navy; and $2,181,600 for warlike naval preparations; making a total for army and navy of $35,290,000, in addition to the $36,200,000 already authorized for the period from August 1 to October 9. A new cabinet appointment, but not necessarily a modification in the policy of the ministry, was necessitated by the death of the foreign minister, Marquis Antonio di San Giuliano, on October 16. Two weeks later the finance minister, Signor Rubini, resigned his portfolio, alleging that he could not agree with his colleagues on the postponement of taxation to cover the increased military expenses of the government. On November 1 the entire cabinet resigned, in order that Signor Salandra might have a free hand in redistributing the portfolios. Three days later, it was announced that Baron Sonnino, former premier and Opposition leader, and two members of the former Giolitti cabinet had consented to enter the new cabinet, which was constituted as follows: Premier and minister of the interior, Salandra; foreign affairs, Sonnino; treasury, Paolo Carcano; justice, Vittorio Orlando; colonies, Martini; finance, Ciuffelli; education, Fusinato; marine, Admiral Millo; posts and telegraphs, Riccio; public works, Rava; war, General Zupelli; agriculture, Vari. Parliament was called together for a two-weeks session in December. Confidence in the new ministry was voted by 413 to 49. A loan of 1,000,000,000 lire and 10 per cent increases in the land and income taxes were authorized. In the course of the debates, the premier expressed the hope that the coming year would add to the nation's glory and greatness, and gave utterance to what might be interpreted as a frank admission that Italy intended to secure her own territorial aggrandizement. For a discussion of Italy's attitude toward the war, consult the article on the WAR OF THE NATIONS. For the military operations incidental to the Italian occupation of Tripoli and Cyrenaica, see the article TRIPOLI. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

ITO, YUKO, COUNT. A Japanese admiral, died Jan. 14, 1914. He was born in 1843 in Satsuma Province, the son of Yuten Ito, a Samurai of the Satsuma clan. He studied at the Naval College during the Tokugawa Shogunate, and early in the Meiji era he was sent to the United States to pursue his studies. In 1868 he entered the navy, and rapidly rose until in 1890 he was rear-admiral and commander of the Standing Squadron. Upon his promotion to vice-admiral he was appointed chief of the Yokosuka Naval Station, principal of the Naval College, and a member of the Board of Admirals. He was in command of the Japanese fleet at the time of the war with China in 1894, and had already shown himself to be a capable officer, when he was called upon to face the enemy at the battle of Yalu. This battle was won by the good organization and discipline of the Japanese fleet and the energy and skill of its officers, which was in a great part due to Admiral Ito. He remained in command until the conclusion of the war, assisting the army in its operations at Port Arthur, and continuing his attacks upon the Chinese until he had completed the destruction of their fleet at Wei-hai-Wei. His chivalrous attitude toward Admiral Ting, his defeated enemy, created much favorable comment, and his energy and activity was subject to professional commendation in Europe and in the United States. In 1895 he was appointed chief of the General Staff of the Navy, and later was created a viscount. He reached the rank of admiral in 1898. He was chief of staff in the war with Russia, and his strategy materially contributed to the final result of that war. In 1897 he was made a count.

IVES, BRAYTON. American banker and soldier, died Oct. 22, 1914. He was born in Farmington, Conn., in 1840, and graduated from Yale in 1861, enlisting shortly after in the Union army. At the age of twenty-two he became colonel of the First Connecticut Cavalry, and he displayed such remarkable bravery and ability that he was advanced rapidly. He was brevetted brigadier-general for gallantry in action at the battles of Ream's Station and Five Forks. Soon afterward he was attached to the Army of the Potomac and took part in Sheridan's raid in May, 1864. He commanded General Grant's escort when the latter went to receive General

Lee's surrender. In 1865 he was mustered out of service with the rank of brevet brigadier-general. After the war General Ives removed to New York where he became a stock broker. He made a study of finance and within a short time became an active advocate of the plan that led to the establishment of the New York Stock Exchange. He was vice-president of that institution in 1876–77, and president in 1878–79. For thirteen years he was a member of the governing committee of the stock exchange. After being in Wall Street twenty-two years he retired as a broker and became president of the Western National Bank, a position which he held until many other interests demanded his attention. He became widely known as an authority on finance and made a specialty of railroad finance. For many years he was president of the Northern Pacific Railway Company. He was president of the Metropolitan Trust Company and also an official of many other financial and industrial corporations. A patron of art and literature and well-known as a collector of books and pictures, his collection of Japanese swords, now in the Metropolitan Museum of Fine Arts, is considered among the best collections in the world.

IVORY COAST. One of the colonies composing the French West Africa government-general. The capital is Bingerville, with 78 European and 780 native inhabitants. Other centres are Grand Bassam, 164 European and 2832 native inhabitants; Abidjan, 110 and 613; Lahou, 78 and 3050; Aboisso, 38 and 1241; Assinie, 38 and 1135. The principal products for export are mahogany and other woods, palm kernels and oil, rubber, manioc, and ground nuts. Neither the climate nor the vegetation is conducive to the development of the grazing industry. The total imports were valued in 1912 at 17,534,048 francs—cotton textiles 4,641,578 francs, rice 1,111,049, beverages 941,880, machinery 711,653, tobacco 387,936, etc. Total exports, 17,615,775 francs—mahogany 1,955,600 francs. The export of palm kernels was 6799 tons, palm oil 6776 tons, rubber 1376 tons. The railways under construction are destined to put into communication with the coast, by way of the equatorial forests, the regions of Bouaké, Kong, and Koroko. The main line in operation starts at Abidjan, on the Ebrié lagoon, and extends through Dimbokro on the N'Zi, an affluent of the Bandama, as far as Bouaké, a distance of 316 kilometers. The line will ultimately reach the frontier. There entered at the ports in the 1911 trade, 380 vessels, of 843,927 tons. The Lieutenant-Governor, 1914, is G. Angoulvant. See French West Africa.

I. W. W. See Industrial Workers of the World.

JAFFRAY, Robert. A Canadian legislator and capitalist, died in December, 1914. He was born near Bannockburn, Scotland, in 1832, and was educated at Stirling Academy. He entered business at Edinburgh, but emigrated in 1852 to Toronto, Canada, where he was engaged in the grocery trade until 1883. He later became director of the Canada Life Insurance Company, of the Canadian Electric Railway Company, of land corporations, and of other interests. In 1888 he became president of the Globe (Toronto) Printing Company, and in 1906 was chosen vice-president of the Imperial Bank of Canada. He was appointed to the Dominion Senate in 1906. Although Jaffray was not active in politics, he exercised considerable influence among Liberal leaders, by whom he was frequently consulted on matters of policy.

JAIL ŒDEMA. See Beriberi.

JAMAICA. The largest of the British West Indian islands; a British crown colony. The island is very mountainous, and is watered by the Black and Rio Grande Rivers. The total area is 4207⅛ square miles, with a population in 1911 of 831,383—15,605 white, 163,201 colored, 630,181 black, 22,396 East Indian. The capital is Kingston, with 57,379 inhabitants in 1911; it possesses a fine harbor.

About 80,000 acres are uncultivable, and of the remaining area, 922,633 acres were reported as productive in 1912–13, divided as follows: 267,276 acres tilled lands, 152,527 under guinea grass, 502,830 commons. Of the 267,276 acres reported under crops, 31,743 were devoted to sugar cane, 22,275 to coffee, 17,377 to coconuts, 81,071 to bananas, 11,236 to cacao, and 103,564 to various products. Port Antonio is the point of departure for the great fruit exports from the Portland district. The Blue Mountain Range is the site of the majority of the coffee plantations, and the district of Vere of the sugar estates. The coast regions of St. James and Trelawney also grow sugar, and here the famous Jamaica rum is produced. Cattle are raised in St. Anne's, Hanover, Westmoreland, and the western part of St. James. The export of sugar in 1912 was 197,960 cwt., valued at £132,798; coffee, 89,586 cwt., £274,730; ginger, 25,213 cwt., £48,203; pimento, 107,504 cwt., £78,388; rum, 894,697 gals., £67,100; dyewoods, 39,322 tons, £88,538; cacao, 65,675 cwt., £139,833. Total exports for 1912, £2,709,283, against £2,948,067 in 1911. The principal imports are foodstuffs, clothing, hardware, alcohol, and building materials. The total imports for 1912 were valued at £3,050,479, against £2,865,553 in 1911. The United Kingdom contributed imports and received exports valued at £1,333,352 and £358,516, respectively; the United States, £1,273,389 and £1,618,614; Canada, £291,363 and £148,943. The total length of railway lines in operation in 1914 was 197.35 miles. There is a line from Kingston to Montego Bay, 112.69 miles; with a branch from Spanish Town to Ewarton, 17.16 miles. From this branch, another branch leaves Bogwalk for Port Antonio, 54.50 miles. There is also a branch from Maypen to Chapelton, 13 miles. There are cables, telegraph, and telephone systems; and 2245 miles of excellent main roads, besides 4000 miles of byways. Revenue, 1912–13, £1,432,400 (£1,356,092 in 1911–12); expenditure, £1,549,667 (£1,350,551). Tonnage entered and cleared, 1912–13, 4,688,438 (4,319,112 in 1911–12), of which 2,617,886 tons British (1,925,983). The public debt stood March 31, 1912, at £3,910,620. Customs revenue, 1911–12, £494,349. The Governor in 1914 was Sir W. H. Manning (appointed 1913). Administratively attached to Jamaica are the Turks and Caicos Islands, the Cayman Islands, Pedro Cays, and Morant Cays.

JANSEN, Marie. An American singer, died March 20, 1914. She was born in 1849 in Boston, her real name being Hattie Johnson. She made her début on the stage in 1881, and in 1883 came under the management of Colonel McCaull, and appeared in *The Beggar Student* which was her first great success. In the next year she went to London where she created for Charles Wyndham the title rôle in *Featherbrain*. Upon her return to the United States she became leading woman for Francis Wilson, a position which she retained for several years. In 1901 she organized a company of her own and toured the United States, retiring shortly after.

JAPAN. A Far Eastern island empire, composed of four large and many small islands off the eastern coast of Asia; together with Formosa (q.v.), the southern half of Sakhalin, Korea (q.v.), and the leasehold of Kwantung. Capital, Tokyo.

Area and Population. In the table below are shown the principal islands and the number of adjacent islands composing Japan proper; the area in square miles of principal islands, adjacent islands, and total area; and the total legal population Dec. 31, 1908:

	No.	*Square miles*			*Pop.*
Islands	*Adj.*	*Isls.*	*Adj.*	*Total*	*1908*
Honshiu	166.5	86,305	470	86,775	37,041,187
Shikoku	74.5	6,856	175	7,031	3,288,310
Kiushiu	150.0	13,768	1,820	15,588	7,167,148
Hokkaida	13.0	30,114	162	30,276	1,134,002
Chishima*	....	6,024	.....	6,024	3,458
Sado	....	335	.....	335	120,510
Oki	1.0	130	.....	130	38,349
Awaji	1.0	218	1	219	210,646
Iki	1.0	51	.....	51	40,522
Tsushima	5.0	262	4	266	39,264
Riukiu†	....	934	.....	934	501,815
Ogasawara-jima‡	....	27	.....	27	3,595
Total	412.0	145,024	2,633	147,657	49,588,801

* 31 islands.
† 55 islands.
‡ 20 islands, not including the volcanic Iwojima.

The total population was estimated in 1912 at 52,200,685. The total population with dependencies was reported in 1912 at 69,148,936, or with the addition of Kwantung (leasehold) at 69,437,025. The Japanese dependencies have an area of 111,150 square miles, as follows: Chosen (Korea), 84,106; Taiwan (Formosa), 13,841; Hokoto (Pescadores), 48; Karafuto (Japanese Sakhalin), 13,155. The Manchurian leasehold of Kwantung (Kwanto) has an area of 1221 square miles.

Foreigners in the country at the end of 1910 numbered 15,154 (8462 Chinese, 2471 English, 1665 Americans, 8090 Germans, 547 French, 237 Portuguese, 116 Russians, etc.). The total number of Japanese proper residing at home and abroad was estimated in 1913 at 52,985,423.

The marriages in 1910 numbered 442,498, living births 1,726,522, deaths 1,073,732, stillbirths 157,392. Some of the largest cities follow, with their resident population, Dec. 31, 1908:

Tokyo, 2,186,079; Osaka, 1,226,647; Kyoto, 442,462; Yokohama, 394,303; Nagoya, 378,231; Kobe, 378,197; Nagasaki, 176,480; Hiroshima, 142,763; Kanazawa, 110,994; Kure, 100,679; Sendai, 97,944; Okayama, 93,421; Saseho, 93,051; Otaru, 91,281; Hakodate, 87,875; Fukuoka, 82,106; Wakayama, 77,303; Yokosuka, 70,964; Sapporo, 70,084; Tokushima, 65,561; Kagoshima, 63,640; Niigata, 61,616; Kumamoto, 61,233; Sakai, 61,103; Shimonoseki, 58,254; Toyama, 57,437; Moji, 55,682; Shidzuoka, 53,614; Fukui, 50,396; Kofu, 49,882; Naha, 47,562; Awomori, 47,206; Utsunomiya, 47,114; Omuda, 45,681; Maebashi, 45,183; Matsuyama, 44,166; Toyohashi, 43,980; Otsu, 42,869; Takamatsa, 42,578; Yamagata, 42,234; Gifu, 41,488; Tsu, 41,229; Himeji, 41,028; Asahigawa, 40,453; Takasaki, 39,961; Wakamatsu, 39,265; Nagano, 39,242; Ashikago, 38,908; Mito, 38,435; Kochi, 38,279; Ujiyamada, 37,539; Hirosaki, 37,487; Akita, 36,294; Matsuye, 36,209; Saga, 36,051; Morioka, 36,012; Kurume, 35,928; Yonezawa, 35,380; Nagaoka, 35,376; Matsumoto, 35,011; Takaoka, 33,603; Fukushima, 34,493; Chiba, 33,341; Nara, 32,732; Tottori, 32,682; Hamamatsu, 32,381; Kiriu, 32,189; Kokura, 31,615; Yokkaichi, 30,704; Onomichi, 30,367; Oita, 29,547; Ashio, 28,618; Takata, 28,021; Wakamatsu, 27,774; Hachioji, 27,550; Marugame, 27,019; Tochigi, 26,301; Kawagoe, 26,031; Akashi, 25,951; Shuri, 25,141; Fushimi, 24,883; Okazaki, 24,824; Bofu, 23,916; Ueda, 23,838; Sakata, 23,513; Yawata, 22,767; Senju, 22,739; Iwamizawa, 22,349; Ogaki, 21,762; Kuwana, 21,544; Yamaguchi, 21,100; Tsuruoka, 21,056; Usuki, 20,923; Tamashima, 20,815; Hikone, 20,648; Muroran, 20,335; Sendagaya, 20,207.

Education. Primary instruction is compulsory, and there is a highly efficient educational system. The total number of primary schools in 1911–12 was 26,750, with 114,797 male and 42,739 female teachers, and 7,023,661 pupils, of whom 3,763,984 were boys. Middle schools for boys numbered 314, with 6092 teachers, and 125,304 pupils; superior schools for girls, 250, with 3300 teachers, and 64,809 pupils; normal schools, 83, with 1571 teachers, and 27,076 students; special and technical schools, March 31, 1911, 6647, with 8091 teachers, and 349,858 pupils. There are 4 universities, with (1911–13) 684 teachers, and 7438 students.

Religion. Shintoism and Buddhism are the principal religious forms, though absolute religious freedom prevails. The State supports no creed. Shrines dedicated to the ancestors of the imperial house are sometimes supported by State or local authorities, but they are independent of creed. The 13 administrative heads of Shinto sects had Dec. 31, 1910, 74,559 priests, 14,527 monks, 171 State temples and temples of superior rank, 51,113 district temples and temples of inferior rank, and 85,850 undesignated temples. The 56 administrative heads of Buddhist sects had 51,830 high priests, 891 high priestesses, 73,047 preaching priests, 50,401 monks, and 71,819 regular, and 36,743 other temples. There were 2046 Christian ministers in the country.

Agriculture. Under cultivation by peasant proprietors is about three-fifths of the arable land, the remainder being worked by tenant farmers. The taxed land owned by private persons and local corporations was reported Jan. 1, 1913, at 14,750,939 cho (1 cho = 2.4507 acres), of which 5,676,086 cho were under cultivation, 7,752,959 under forests, and 1,321,894 open field. In the table below are given details of planted area and yield for comparative years:

	1910	*1911*	*1912*
Rice *	2,949,439	2,973,009	3,003,082
" **	46,633,376	51,712,433	50,227,132
Barley *	620,445	598,565	598,100
" **	9,291,383	9,385,575	9,790,709
Rye *	675,750	667,246	680,058
" **	6,718,106	7,506,015	7,900,112
Wheat *	475,458	499,204	496,331
" **	4,601,756	5,009,840	5,179,500
Sugar cane *	19,141	20,062	21,280
" " †	190,973,502	219,870,982	229,179,482
Tea *	48,366	47,479	48,693
" †	8,151,413	8,474,794	8,778,066

	1910	1911	1912
Peas *	479,770	478,187	489,855
" **	3,766,962	3,896,716	3,698,193
Azuki (beans)*	135,287	141,074	141,094
" **	902,801	965,796	955,698
Millet *	194,331	189,474	185,848
" **	2,227,589	2,092,699	1,987,666
Kimi *	31,544	33,618	32,699
" **	390,609	422,860	396,923
Hie *	58,727	58,337	57,155
" **	815,924	775,315	795,255
Buckwheat * .	157,222	156,691	151,027
" ** .	1,274,163	1,311,575	1,216,422
Colza *	140,166	138,446	138,468
" **	1,052,299	1,048,051	1,050,476
Potatoes * ...	62,004	68,884	68,919
" †	159,687,502	179,897,660	182,659,843
Sweet potatoes*	294,987	298,207	298,843
" " †	907,487,064	882,877,987	1,005,903,326
Cotton *	4,006	3,899	2,799
" †	976,518	721,281	781,054
Hemp *	12,716	12,817	11,685
" †	2,487,260	2,480,210	2,552,158
Tobacco *	29,374	29,724	27,756
" †	11,110,086	11,344,489	9,059,335
Indigo *	9,545	9,222	5,887
" †	4,991,486	5,282,850	3,280,171

* In cho of 2.4507204 acres.
** In koku of 4.9629141 bushels.
† In kwan of 8.2673297 lbs.

Quantity of refined sugar produced in 1909–10, 98,024,516 kin (1 kin = 1.3227727 pounds); in 1910–11, 109,547,141; in 1911–12, 114,600,675.

There were in the country, Dec. 31, 1912, 1,399,498 cattle, 1,518,743 horses, 308,970 swine, 3308 sheep, and 101,475 goats.

Other Industries. The mining products in 1911 were 150,544 ounces of gold, 4,438,140 ounces of silver, 14,240,438 kwan of copper, 17,032,591 kwan of iron ore, 19,666,367 kwan of sulphurous iron, 1,099,934 kwan of lead, 2,605,315 kwan of manganese, 6,288,941 kwan of zinc ore, 31,812 kwan of tungsten, 406,508 kwan of chrome, 17,354,181 tons of coal, 1,529,593 koku of petroleum, 13,406,503 kwan of sulphur, 30,512 graphite, 336,135 asphalt, 604,869 phosphorus. Production of salt, 1911–12, 949,233,252 kin.

The total fisheries products were valued for 1911 at 123,890,722 yen—83,019,709 yen fresh fish and marine plants, 21,407,732 yen dried fish, 2,247,040 salt fish, 6,899,980 manure, 479,994 fish oil, 9,836,267 other products. There were in 1911, 14,228 industrial establishments, employing 317,388 male and 476,497 female operatives, and 122,359 male and 40,412 female assistants. There were 90 cotton mills, employing 16,921 male and 71,628 female operatives, with 1,901,290 spindles; output, 55,974,015 kwan of yarn. Weavers numbered 41,531 males and 707,350 females, with 89,003 machine looms, and 638,412 hand looms; value of output of woven piece goods, 107,413,465 yen silk, 30,025,115 yen mixed silk and cotton, 139,745,299 yen cotton, 3,998,960 yen hemp, etc. Value of output from the paper mills, 20,330,306 yen Japanese and 18,985,650 yen European paper; matches, 12,203,908 yen; earthenware, 14,895,603; lacquer ware, 5,964,104; matting, 10,407,993; leather, 6,462,618; oil, 12,607,775.

Commerce. In the table below are given for comparative years in yen import and export values—total merchandise, coin and bullion, and total trade:

	1911	1912	1913
Imports mdse. ..	513,805,705	618,992,277	729,431,644
" C & B..	6,168,268	11,544,351	1,021,351
Total	519,973,973	630,536,628	730,452,995
Exports mdse ..	447,433,888	526,981,842	632,460,213
" C & B .	24,398,286	28,325,153	27,098,346
Total	471,832,174	555,306,995	659,558,559

Of the above totals, 512,942,169 yen in 1911, and 618,160,786 yen in 1912 were imports for home consumption, and 863,536 yen in 1911 and 831,491 yen in 1912 were reimports; 442,996,848 yen in 1911 and 524,614,921 yen in 1912 were exports of Japanese produce, and 4,437,040 yen in 1911 and 2,366,921 yen in 1912 were reëxports. Details of the special trade for three years are given in the following table, in yen:

Imports	1911	1912	1913
Rice	17,721,085	30,192,487	48,472,446
Wheat	3,728,829	4,400,938	12,351,029
Wheat flour	1,702,961	1,722,140	1,781,660
Soy beans	10,305,636	10,222,285	10,388,487
Sugar	9,156,747	16,046,908	36,762,302
Raw cotton	145,455,124	200,824,208	233,599,185
Cotton shirtings, etc.	3,052,629	3,261,588	2,468,407
Cotton satins ..	1,908,684	3,118,924	3,438,502
Wool	11,262,992	16,838,968	15,998,149
Woolen yarn ...	4,782,548	8,225,051	10,091,604
Woolen cloth ..	10,656,167	6,911,278	10,501,803
Oil cake	29,862,048	27,479,958	39,418,165
Petroleum	13,065,880	12,488,180	11,058,807
Iron bar, rod & plates	5,377,768	35,600,242	33,288,861
Engines and rolling stock	2,224,986	2,562,881	8,668,485
Machinery	....	28,289,481	34,358,844
Exports			
Cotton yarn	40,218,289	58,680,797	70,997,588
Cotton shirtings	7,882,182	25,759,685	33,557,999
Raw silk	128,875,094	150,824,788	188,884,182
Silk waste	7,785,646	10,546,185	10,465,427
Silk mfrs.	30,686,427	26,882,129	34,882,279
Coal	17,989,618	20,828,381	23,670,886
Matches	10,072,886	12,048,588	11,864,514
Copper	20,002,580	24,920,687	23,188,904
Camphor	3,148,084	2,826,754	2,285,784
Tea	14,379,260	13,466,552	10,077,421
Rice	3,940,541	4,382,677	4,372,118
Matting	3,746,484	3,758,043	4,054,010
Earthenware ...	5,377,705	5,451,890	6,638,994
Straw-plait	4,717,224	17,337,999	15,692,054
Sake	2,134,658	2,228,448	2,198,107
Refined sugar ..	1,885,336	8,477,328	15,331,330
Toys	....	1,898,845	2,489,848

Preliminary trade returns for 1914 show a great decline in import values, most of which is attributed to the European War. The estimate for imports is 625,000,000 yen, and for exports 680,000,000 yen. By principal countries of origin and destination import and export values are given below for 1912 and 1913, in thousands of yen:

	Imports		*Exports*	
	1912	1913	1912	1913
British India ..	184,742	173,174	28,648	29,878
United Kingdom.	116,147	122,787	29,792	32,870
United States ..	127,016	122,408	168,709	184,473
Germany	61,076	68,395	18,487	18,181
China	54,807	61,223	114,824	154,660
Du. E. Indies ..	19,068	37,389	4,348	5,148
Kwantung	25,707	30,878	27,545	29,886
French Indo-China	10,644	24,700	48,871	60,280
Philippine Islands	5,276	7,648	5,585	6,288
Switzerland	1,584	1,795	490	322
Australia	12,792	14,948	8,629	8,688
Belgium	9,087	9,448	3,080	3,705
Egypt	6,890	7,148	884	1,371
France	5,421	5,829	48,871	60,229
Siam	3,537	5,798	1,336	1,085
Straits Settlements	4,721	5,205	8,891	10,141
Austria-Hungary	8,241	8,890	1,322	937
British America.	664	1,893	4,808	5,090
Hongkong	881	1,294	28,718	33,622
Italy	803	1,078	18,412	29,417

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
Russia in Asia .	669	750	8,542	4,271
Russia in Europe ..	78	41	2,540	4,897
Total mdse. *	618,992	792,432	526,981	682,460
Coin & bullion .	11,544	1,021	28,825	27,098
Total	630,537	780,458	555,807	659,558

* Including other countries.

There were entered at the ports in the 1912 trade, 9386 vessels, of 21,700,268 tons, of which 5358 steamers of 10,220,202 tons, and 422 sailing ships and junks of 56,236 tons were Japanese, and 3599 steamers of 11,413,616 tons, and 7 sailing ships of 10,214 were foreign. The merchant marine included Jan. 1, 1913, 1981 steamers of 20 tons and over, with an aggregate tonnage of 1,230,329; 6443 sailing vessels of 20 tons and over with an aggregate tonnage of 447,307; besides 20,635 native craft. Japanese shipping companies for foreign trade are subsidized by the government.

Communication. Total State railways in operation March 31, 1912, 6008 miles; private railways, 1059 miles—total, 7067 miles. Gross income, 109,170,105 yen (104,248,132 yen from State and 4,921,973 yen from private railways); expenditure, 50,179,068 (47,777,085 and 2,401,983); goods carried, 36,008,113 tons (31,501,510 and 4,506,603); passengers carried, 185,962,149 (156,636,964 and 29,325,185). Electric tramways in operation in 1912, 844 miles; under construction, 306 miles. In 1914 within a radius of 50 miles of Osaka there were nearly 250 miles of double track in operation, and 80 miles additional were under construction or proposed for immediate building. In the immediate neighborhood through electric lines to the amount of less than 50 miles were in operation; as much more was under construction. Length of telegraph lines in operation in 1912, 20,524 miles, with 103,962 miles of wire; post and telegraph offices, 7187.

Finance. The standard of value is gold, and the monetary unit the yen, whose par value is that of the Mexican dollar, or 49.846 cents. In the table below are shown revenue and expenditure in yen for successive years:

	1911-12	*1912-13*	*1913-14*
Revenue	657,192,221	375,765,090	424,965,494
Expenditure .	585,374,618	401,578,195	428,509,969

The revenue was estimated for 1914–15 at 645,200,000 yen, and the expenditure at 640,000,000 yen. The details of the budget for the year ending March 31, 1914, are shown in the table below in thousands of yen:

Revenue	*1000 yen*	*Expenditure*	*1000 yen*
Land tax	75,335	Civil list	4,500
Income tax	35,472	Foreign affairs ..	4,298
Business tax	25,059	Home affairs	12,591
Liquor tax	89,047	Finance	188,910
Sugar excise	15,125	Army	78,155
Tax on textiles .	19,180	Navy	42,236
Customs duties ..	55,907	Justice	12,394
Enterprises	140,034	Instruction	9,547
Stamps	29,071	Agriculture, etc. .	7,708
Posts & Tels. ...	58,993	Communications .	61,678
Forests	10,763		
Monopolies	63,850	Total ordinary .	422,018
		Extraordinary ...	164,789
Total ordinary .	529,756		
Extraordinary ...	57,052		
Total	586,808	Total	586,808

The total of the debt stood March 31, 1913, at 2,493,969,745 yen, of which internal loans totaled 1,066,286,841 yen, and foreign loans 1,427,682,905 yen.

Army. Service in the Japanese army is compulsory for all men between the ages of 17 and 40, and the peace establishment of the active army is maintained at an actual strength of about 240,000 men of all ranks. On a war basis the first line or field army could be augmented to 450,000, and the second line, which is fully trained, would be 300,000. Through its alliance with Great Britain, Japan became involved in the great European War, and its army participated in the siege and capture of Kiaochow, the fortress of Tsingtao surrendering on November 1, after an investment of less than two months. No great mobilization of the Japanese army was undertaken during the year, but the forces were in readiness for active work should the war be carried vigorously into Asia. In 1913, at the time of the discussion of the military budget for 1913–14, there was a considerable controversy, and the establishment provided for by that document was molded to a certain extent by public feeling. It was reported that the military authorities had a secret plan in view to increase the number of divisions to 25, or an increase of 8 new divisions; the 17th and 18th having been organized in 1909 were virtually complete in 1910, and the 19th soon after. Two more divisions were demanded at the time of the discussion of the budget of 1913–14, and were to have been used for the permanent garrison of Korea, where the troops are relieved every two years, the garrison in 1913 being 1 entire division and a provisional brigade formed by drawing 24 companies from 6 divisions in April of each year. The whole budget of 1913–14 amounted to 135,550,363 yen, and did not represent an increase over the previous year as was hoped, so that as a result the increase in the military forces of Japan came to a halt, and the military authorities were still demanding the 2 divisions previously required. The organization of the army in 1914 was essentially as indicated in the Year Book for 1913.

Navy. The number and displacement of warships of 1500 or more tons, and of torpedo craft of 50 or more tons, built and building, on July 1, 1914, are reported as follows: Dreadnoughts (battleships having a main battery of all big guns, i.e., 11 or more inches in calibre): built, 2, of 41,600 tons; building, 4, of 122,400 tons. Predreadnoughts (battleships of about 10,000 or more tons displacement, whose main batteries are of more than one calibre): building, 13, of 191,380 tons; built, none. Coast-defense vessels: built, 2, 9086 tons; building, none. Battle cruisers (armored cruisers having guns of largest calibre in main battery and capable of taking their place in line of battle with the battleships): built, 2, of 55,000 tons; building, 2, of 55,000 tons. Armored cruisers: built, 13, of 138,483 tons; building, none. Cruisers (unarmored warships of more than 1500 tons): built, 13, of 57,915 tons; building, none. Torpedo-boat destroyers: built, 50, of 20,487 tons; building, 2, of 1676 tons. Torpedo boats: built, 27, of 3017 tons; building, none. Submarines: built, 13, of 2672 tons; building, 2, of 1200 tons. Total tonnage built, 519,640; building, 180,276. Excluded from the foregoing: ships over 20 years old from date of launch, unless reconstructed and rearmed within five years; torpedo craft over 15 years old; transports, colliers, repair ships, torpedo-depot ships, and other auxiliaries; vessels not actually begun or ordered, although authorized. Japan is fifth among the nations in amount of warship tonnage built and also in the aggregate of tonnage built and building, being exceeded by the United Kingdom, Germany, France, and the United States. In the amount of tonnage building, Japan was exceeded also, July 1, 1914, by Russia and Italy, the former having 407,957 tons under construction, and the latter 212,355 tons.

The active personnel in 1914 was 55,736 officers and men, including 2 admirals of the fleet, 6 admirals, 19 vice admirals, 38 rear admirals, 270 captains and commanders, 1965 other line officers, 119 midshipmen at sea, 811 engineer officers, 364 medical officers, 388 pay officers, 135 naval constructors, etc., 1569 warrant officers, and 50,050 enlisted men.

GOVERNMENT. The Emperor is the executive, acting through a cabinet of ministers whom he appoints and who are responsible to him. The legislative body is a parliament, or imperial diet, of two chambers—a house of peers of 366 members and a house of representatives of 379. With the consent of the diet, the Emperor also exercises legislative power. Representatives are elected by male subjects having attained the age of 25, and possessing certain qualifications. The reigning Emperor in 1914 was Yoshihito, born at Kyoto, Aug. 31, 1879; succeeded his father, Mutsuhito, July 30, 1912; he married, May 10, 1900, Princess Sadako. The heir-apparent is Prince Hirohito, born April 29, 1901. The cabinet as composed April 16, 1914, is given in the paragraph on *History*.

HISTORY

NAVAL QUESTIONS AND THE CABINET. The most significant feature of Japanese politics was the energetic campaign carried on in Parliament and in the country against the navy. Popular sentiment was steadfastly opposed to any policy of naval aggrandizement which would add to the heavy burden of taxation. Consequently a very cool reception was accorded to the budget estimates, which the government submitted in January, when it was discovered that, although the army estimates were lower than in the current year, the naval estimates called for an expenditure of $50,000,000, an increase of about 3 per cent. The total budget expenditure showed an increase of $25,000,000. Moreover, a new naval programme was laid down involving the expenditure of $80,000,000 in seven years. Such a budget, when Japan needed above all things economy and retrenchment, was sure to provoke hostile criticism; but the spirit of antagonism to the navy was just at this time even more violently aroused by the revelation of widespread corruption on the part of high naval officials. The naval scandals took their rise from the trial in Berlin of one Carl Richter, formerly employed in the Tokyo office of the German naval contractors, Siemens Schuckert, on the charge of stealing important documents, which, Richter alleged, contained proof that the German firm had attempted to bribe Japanese officials in order to obtain Japanese naval contracts. An inquiry was instituted in Japan, and it developed that Herr Hermann, Tokyo representative of Siemens Schuckert, had given an indirect bribe of some $5000 in connection with a wireless contract, and had burned some documents which might have been used as incriminating evidence. Mr. Pooley and Mr. Blundell, agents of Reuter's news agency, were alleged to have purchased for $375 certain documents stolen from the office of Siemens Schuckert by Richter for the purpose of blackmailing Siemens Schuckert. The firm actually had paid $25,000 for the surrender of the documents. Even more startling were the accusations leveled at the *Mitsui Bussan Kaisha*, the Japanese agents for the British armament firm of Vickers, Ltd. Three directors of the *Mitsui Bussan Kaisha*, it was alleged, had transmitted bribes totaling $200,000 to Vice Admiral Matsumoto through the instrumentality of Admiral Matsuo. Admiral Matsuo, Rear Admiral Fujii, Captain Sawazaki, Commandant Suzuki, and various civilians were placed under arrest for suspected complicity. On March 17, Yoshida, a Japanese employee of the German firm, hanged himself in his cell in the Tokyo jail. In May the public learned that Admiral Fujii had accepted over $175,000 in commissions from British shipbuilders between January, 1911, and September, 1912. Late in May Vice Admiral Matsumoto was sentenced to 3 years' penal servitude and ordered to pay the $200,000 bribe. Captain Sawazaki had to repay $6000 and received 1 year's imprisonment. Commander Suzuki was acquitted. All this made splendid material for those who condemned the big navy appropriation. Early in February the critics of the government opened fire in Parliament. A vote of censure was proposed, but on this occasion the *Seiyukai* party voted with the government and defeated the motion. Huge mass meetings indicated the excitement of the populace. On February 14 the House of Representatives was thrown into a tumult, while the ballot boxes were destroyed by an Opposition member. After a stormy debate, the House of Representatives decided to reduce by $15,000,000 the naval expenditure for the years 1916–20, and to divert $23,000,000 from the replenishment of the navy fund to agricultural and industrial development. The House of Peers went even further and struck off an additional $20,000,000 from the estimates for 1916–20. A deadlock between the two chambers ensued. In the face of the crisis thus brought about, the government on March 23 unexpectedly suspended the Diet for three days; on March 24 the cabinet resigned; and on March 26 the session of the Diet was terminated. The *Genro*, or Council of Elder Statesmen, then met to select a new premier. First they asked Prince Tokugawa, the president of the House of Peers; then Viscount Kiyoura was asked, and refused; finally Count Okuma was invited to form a cabinet representing the Opposition parties. On April 16 the constitution of the new cabinet was announced as follows: Premier and home secretary, Count Okuma; foreign affairs, Baron Kato; finance, Wakatsuki; navy, Admiral Yashiro; war, General Oka; justice, Ozaki; education, Ichiki; communications, Taketomi; commerce, Viscount Oura. In his declaration of policy Count Okuma demanded economic reform, the elimination of corruption, and the establishment of true constitutionalism. In May he elaborated his programme along these lines, and promised to work towards the reduction of taxes, the improvement of official discipline, the preservation of peace, the development of the constitutional system of government, the encouragement of education, and the promotion of productive enterprises.

ANTIMILITARISM IN THE DIET. The Diet was convoked for a very brief session in June. In December a more important session of the Diet was inaugurated. Naturally the discussion turned upon the part played by Japan in the War of the Nations, and the ministry which had promised retrenchment and economy had to confess that enormous sums had been expended for the conduct of the war. The Diet was asked to prove its patriotism by voting a new budget for 1915, authorizing substantial army increases, and showing a total expenditure of 556,000,000 yen ($278,000,000), with a falling off in the revenues of 81,000,000 yen ($40,500,000). Ignoring the ministry's appeals for unanimity, the Lower House of the Diet rejected the army increase by a majority of 65 votes. Rather than give up the demand for the augmentation of the army, the cabinet appealed to the Mikado, with the result that on December 25 he dissolved the House of Representatives and called new elections for March, 1915.

The Dowager Empress Haruko died on April 9 at the palace at Numadzu; her body was taken to Tokyo, where her official death took place, and her funeral was impressively celebrated on May 24. Japan's participation in the war, and the capture of Tsingtao, are treated in the article on the WAR OF THE NATIONS. The difficulties between Japan and the United States in regard to anti-Japanese legislation in California, are treated in the article on the UNITED STATES.

JAURÈS, JEAN LÉON. French Socialist public official, assassinated July 31, 1914. He was born at Castres in the Tarn, Sept. 3, 1859. At the age of 17 he entered the Lycée Louis le Grand, and in 1881 became a fellow in philosophy. He soon afterwards became professor of philosophy at the lycée of Albi, the capital of his native department, and later was appointed to the chair of philosophy in the faculty of arts at the University of Toulouse. In 1885 he entered the Chamber of Deputies as a Republican, and four years later, defeated for reëlection, he retired to teach philosophy and to write essays on that subject. He became a municipal councilor and later an assistant to the Mayor of Toulouse. During this period he helped to found the medical faculty of the university. As a result of his study in politics, his opinions began to change, and he took the part of the miners in a strike at Carmaux, and was rewarded by being returned as a Deputy for the Albi division in 1893. From this time his talents were devoted to the purpose of "transforming the political republic into the economic and social republic." His eloquence in the Chamber brought him rapid recognition, and under his leadership the group of fifty Socialists in the Chamber grew steadily, and, with great political shrewdness, he used them to forge against the majority a weapon which became very formidable. It became necessary to reckon with him when cabinets were being formed, and in 1899 his opposition prevented Poincaré from forming a cabinet. He induced Waldeck-Rousseau to take Millerand, a Socialist, into the same ministry with the Marquis de Gallifet. In 1907 he openly defied the Premier Clémenceau, and he fought Briand on his railway strike policy. Early in 1914 he accused Caillaux, the minister of finance, of having abandoned his principles on the income tax of 1909, and he was apparently preparing to attack Premier Viviani on the subject of the three years' army service law. During the last fifteen years of his life he was one of the acknowledged leaders of the French Unified Socialists, and as a statesman, journalist, debater, and orator, he gave his splendid abilities to their cause without stint. He hoped ardently that peace would come through economic freedom. He was denied the privilege of speaking in Berlin by Chancelor von Buelow. Speaking as the foe of militarism, he made the threat to Germany that if she sought to make France a hostage in the event of war with Great Britain, there would leap forth a resistance unequaled in the history of the world. It was his unqualified opposition to the three years' military service bill and the consequent fear of his possible disloyalty to France that led a militaristic fanatic, on the eve of the outbreak of the War of the Nations (q.v.), to assassinate him. See FRANCE, *History, passim*.

Jaurès was the editor of *Humanité* (which he founded in 1904), and wrote for it every day a special article which was widely read by his enemies as well as by his friends. He was also editor of *La Petite République*. His published writings include: *Les Preuves* (1898); *Action Socialiste* (1900); *Etudes Socialistes* (1902); *Discours Parlamentaires* (1904); *Histoire Socialiste, 1789–1900* (1906); and *Idéalisme et materialisme dans la conception de l'histoire* (with P. Lafargue).

JAVA. See DUTCH EAST INDIES.

JELLICOE, SIR JOHN RUSHWORTH. See WAR OF THE NATIONS.

JESSOPP, AUGUSTUS. An English clergyman and writer, died Feb. 15, 1914. He was born in 1823 and was educated in St. John's College, Cambridge. After serving as curate in a parish in Cambridgeshire in 1854, he became headmaster of Helston Grammar School, and five years later became head of King Edward's School at Norwich. During this period he began writing, contributing chiefly to the *Nineteenth Century*. In 1870 he became a member of the University of Oxford, and in 1890 was appointed select preacher at Oxford, being made an honorary canon of Norwich in 1895, and from 1902 to 1910 serving as Chaplain-in-Ordinary to King Edward. His writings include a variety of subjects. Among them are: *Essays in Divinity* (1855); *History of the Diocese of Norwich* (1879); *Arcady for Better for Worse* (1881); *The Autobiography of Roger North* (1887); *Trials of a Country Parson* (1896); *Before the Great Pillage* (1901). He contributed many important articles to the *Dictionary of National Biography*.

JEWS AND JUDAISM. Accurate statistics of Jewish population are still wanting. The most authoritative estimate, made by the American Jewish Year Book for 1914–15, reckons the total Jewish population of the world as 13,277,542, distributed as follows: Africa, 413,259; America, 2,500,054; Asia, 356,617; Australia, 19,415; and Europe, 9,988,197. By countries, the same estimate shows 2,258,262 Jews in Austria-Hungary; 15,000 in Belgium; 37,656 in Bulgaria; 75,681 in Canada; 100,000 in France; 615,000 in Germany; 6127 in Greece; 43,929 in Italy; 1270 in Luxemburg; 481 in Portugal;

269,015 in Rumania; 6,060,415 in the Russian Empire; 5729 in Servia; 19,023 in Switzerland; 188,900 in Turkey; 245,000 in the United Kingdom: and 2,349,754 in the United States.

GENERAL EVENTS. The overwhelming event in the Jewish world during 1914, as in all the rest, was, of course, the great war. A glance at the figures given above will show that nearly three-fourths of the Jews of the world are directly affected by the Eastern campaign alone. Some 600,000 Jews were engaged in all the belligerent armies at the close of the year. Russia alone commanded about 350,000 Jewish soldiers. Quite apart from the extreme suffering and privation which the Jews in this war must undergo with the rest of the world, their lot was much aggravated by being forced to fight friend and foe alike. Being found in the ranks of every army, they must of necessity battle for and against every European country, regardless of all self-interest. In this most awkward position —a position between hammer and anvil—are the half-million Jewish soldiers engaged in the war, especially those fighting for and against Russia. This dilemma provoked considerable discussion among the leaders of Jewish thought. Thus, while the Jewish Deputy from Kovno officially pledged the undivided support of his coreligionists to the Russian cause, English and American Jews urged the opposite course, holding that Russian victory would hazard the social and political prospects. On the other hand, such prominent leaders of Judaism as Israel Zangwill and Richard Gottheil unequivocally urge their brethren to support the respective nations of their domicile. The predicament of the Russian Jews in this conflict was greatest perhaps in the case of Palestine, whose Russian Jewish inhabitants averted wholesale expulsion by naturalization, which was accorded them as a special privilege. Thousands of Jewish aliens, however, who would not or could not become naturalized fled the country. According to official dispatches to the State Department at Washington (Jan. 18, 1915) 6000 such refugees have already reached Alexandria (Egypt), with thousands more to follow. Of these 75 per cent were Russian Jews, and the rest British or French. Destitution in Palestine and the adjoining colonies was well-nigh universal, and the appeals for help through the American Ambassador in Turkey (Morgenthau) were frequent and urgent during the year.

LABOR AND LEGISLATION. The year 1914 began and ended in crises for Jewish American labor. Not since 1907 have the Jewish trades in the United States experienced such hard times, for, added to the general industrial depression caused or induced by the war, the Jewish trade-unions have gone through a number of rather serious labor controversies. Of these the most important were the cloakmakers', the bakers', and the tailors' strikes. (See STRIKES.) Despite these and other industrial disputes, the Jewish trade-unions have not been disorganized, as under similar circumstances in previous years, and have more than held their own. In legislation nothing has been done the world over of particular interest to Jews, unless President Wilson's veto of the Burnett Immigration Bill, to which American Jews were especially opposed, may be considered as such. The Russian-Jewish passport question, which has held up our commercial treaty with Russia, is still unsettled and promised to remain so during the continuance of the war. In England the introduction into Parliament of the Humane Slaughter of Animals Bill, and the Weekly Rest-Day Bill momentarily threatened Judaism.

LITERARY EVENTS. The present distressing conditions in Europe have forced many Jewish writers to seek haven in the United States, and thus the centre of Jewish literary activity has been temporarily, if not permanently, shifted to America. Among those who have already joined the Jewish writers in America, the most important are Sholom Aleichem, the famous Yiddish humorist whose real name is Solomon Rabinovitch; Sholom Asch, the celebrated novelist and playwright; and Abraham Reisin, the well-known poet and novelist. The others include Peritz Hirshbein, M. S. Malamed, G. Goldstein, and Olgin. This influx of Jewish writers has already given new life and strength to the Jewish-American press. Several new Jewish and Jewish-English periodicals have already sprung into existence, while the old ones are pulsating with the infusion of new blood. Passing over the numerous literary productions both here and abroad, mention must be made of the new Jewish translation of the Bible, which has been many years in preparation, and is the most authentic and complete Jewish version of the Bible ever made. As a semiliterary event we might mention the formation of the American-Jewish Press Association, an organization of Jewish weeklies published in the United States.

PERSECUTION AND DISABILITIES. In spite of the almost universal loyalty of the Jews in this war to their respective governments, their civil and political disabilities have nowhere been removed. In Russia, as an aftermath of the Beiliss affair, 25 lawyers were tried and convicted on the charge of insulting the Ministry of Justice. At the same time another attempt to fabricate a "ritual murder" case was made on the murder of an alleged Christian boy (Pashkov). This attempt proved futile on the discovery that the Jew charged with the boy's murder was his own father. Earlier in the year the petition of 16,800 Russian Jews to the Czar for clemency in connection with the tercentenary of the Romanov dynasty, was flatly turned down. Some of these asked for the privilege of being allowed to remain outside the Pale, others begged to be permitted to send their children to government educational institutions, while the rest sought exemption from fines imposed in connection with conscription and the removal of certain restrictions in the legal profession. All appeals in behalf of educational and professional privileges were refused. Out of 1791 domicile petitions, only 9 were successful; while of the 316 appeals against military fines, 29 only were granted. The rumored promise by the Czar of full civil and political rights to his Jewish subjects still awaits official confirmation, while *Novoye Vremia*, the semiofficial Petrograd daily, boldly proclaimed that the Jews have nothing to expect in Russia even after the war. In the meantime, thanks to anti-Semitic agitation, the Russian decree permitting Jews to rank in the army as officers and surgeons has been revoked. Moreover, anti-Semitic outbreaks throughout the Russian Empire have continued during the year. Elsewhere, too, the lot of European Jews has undergone no change for the better.

In Galicia the anti-Semitic elements have been clamoring for the prohibition of Jewish land-owning. Rumania's promise of Jewish emancipation made in the Balkan campaign has not been kept, although the Rumanian Jews saw a gleam of hope when a convention was called for the revision of the Constitution. But, despite persistent demands by the "Union of Native-born Jews," the Jewish question was entirely ignored by the Constituante, which held, that Article VII of the Rumanian Constitution (which provides a procedure for the naturalization of aliens) does not apply to Jews. At the same time the Liga Cultura, a Rumanian nationalist organization, threatened to give the signal for a general massacre of Jews, should the Union call another meeting. The latter was about to make its grievances known to the world at large when the great war thrust this question into the background.

Zionism. The troubled year of war has given Zionism the greatest setback in its history. The means with which this movement has been carried on, and its most active workers, have been chiefly European. Its organization, which had its headquarters in Berlin, has naturally been completely disrupted. In this emergency a provisional Zionist Actions Committee, with Louis Brandeis as president, has been formed in the United States to carry on the work which the war has interrupted. Palestine, the objective realization of Zionism, had made considerable progress before the war broke out. Its Jewish population had reached 100,000, while the agricultural colonies numbered between 12,000 and 15,000 souls, possessing some 100,000 acres of land. We have already seen how the war has paralyzed its normal activities, for the great conflict has cut it off from European support, and forced it to appeal to America for aid, while its male population was forced to choose between enlisting in the Turkish army, paying exorbitant ransom money, and fleeing the country. Under these circumstances, American Jewish philanthropy has been repeatedly drawn upon. Indeed, signs are multiplying that the centre of Zionist activity, like the centre of Jewish literary activity, is being shifted from Europe to the United States. At the same time England has been discussing seriously the possibility of forming a Jewish State in Palestine at the close of the war, and an international Jewish organization to look after Jewish interests when the world's peace is made has been repeatedly suggested in the Jewish-American press.

JODL, Friedrich. A German educator and philosopher, died Jan. 26, 1914. He was born at Munich Aug. 23, 1849, and was educated in the gymnasium and university of that city. He became instructor in history at the Kriegsakademie of Munich in 1873, lecturer at the university in 1880, and professor of philosophy at the German University of Prague in 1885. In 1896 he was called to the chair of philosophy at the University of Vienna. He became an active member of a society to advance the knowledge of German science, art, and literature in Bohemia, second president of the German society for Ethical Culture, and a member of the Imperial Academy of Vienna. In 1890 he became an editor of the *International Journal of Ethics*. Jodl belonged to the positivist school of philosophy. His publications include: *Leben und Philosophie David Hume's* (1872); *Die Kulturgeschichtschreibung, ihre Entwickelung, ihre Problem* (1878); *Geschichte der Ethik in der Neueren Philosophie* (vol. i, 1882, 2d ed., 1906; vol. ii, 1889, 2d ed., 1912); *Volkswirtschaftslehre und Ethik* (1886); *Moral, Religion, und Schule* (1892); *Ueber das Wesen des Naturrechts* (1893); *Wesen und Ziele der ethischen Bewegung in Deutschland* (1893; 2d ed., 1898); *Abriss der Geschichte der Ethik* (1896); *Lehrbuch der Psychologie* (2 vols., 1896; 3d ed., (1908); *Gedanken über Reformkatholizismus* (1902); *Ludwig Feuerbach* (1904); *Das Problem des Moralunterrichts in der Schule* (1912).

JOFFRE, Joseph J. C. See War of the Nations.

JOHNS HOPKINS UNIVERSITY. An institution for higher and special education, founded at Baltimore, Md., in 1876. There were enrolled in the several departments of the university in the autumn of 1914, 1374 students, of whom 898 were in regular courses, 170 in college courses for teachers, and 366 in summer courses; at the same date the faculty numbered 240. The most notable event in the history of the university during the year was the election of Frank J. Goodnow, LL.D. (q.v.), to succeed Ira Remsen as president. Dr. Theodore C. Janeway, of New York, was appointed professor of medicine. The university received during the year $50,000 from the General Education Board for surgical and pediatric research, and $20,000 to establish the Quincy Fund for physical research. The annual income amounts to about $451,000, and the productive funds to $6,265,479. The library contains 181,300 volumes.

JOHNSON, Jeremiah Augustus. An American lawyer and public official, died Feb. 28, 1914. He was born in Boston in 1836, and received an academic education. From 1858 to 1867 he was United States Consul at Beirut, Syria, and was consul-general in the same city from 1861 to 1870. In 1862 he procured the arrest and execution of the Turk who assassinated Mr. Coffing, an American missionary, the case being famous at the time. President Lincoln publicly thanked Mr. Johnson for his success in this undertaking. While he was in Syria he became interested in archæological research, and with the Rev. Samuel Jessup, discovered the stones containing the famous Hittite inscriptions. While still at Beirut, he was admitted to the bar and after resigning from the consular service in 1870 he practiced law in New York City. He was a member of several patriotic societies.

JOHNSTON, Christopher. American scholar and educator, died June 26, 1914. He was born in Baltimore in 1856, and graduated from the University of Virginia in 1878. He studied medicine at the University of Maryland and afterwards specialized in Assyriology and Semitics at Johns Hopkins. For a few years he practiced medicine, but devoted much time to the study of ancient languages. In 1908 he became Professor of Oriental History and Archæology at Johns Hopkins University. He wrote extensively on the literature of the Assyrians and Babylonians, and edited a number of works on similar subjects. He was a member of many learned societies in the United States and Europe.

JOHORE. A native State in the Malay Peninsula, under British control. Estimated area, 9000 square miles; population, 1911, 180,412, of whom about one-half are Malays, and about one-third Chinese. Johore Bharu is the capital. A State railway extends from Johore Bharu 120½ miles northwest to Kuala Gemas, on the Negri Sembilan border, where it connects with the Federated Malay States Railways.

JONES, Thomas Goode. An American jurist, died April 28, 1914. He was born in Macon, Ga., in 1844, and graduated from the Virginia Military Institute in 1862. He served with the Confederate Army as staff officer under Gen. John B. Gordon and obtained the rank of major. He was several times wounded during the war, and after its close he established a law practice at Montgomery, Ala. From 1870 to 1880 he was reporter on decisions for the Supreme Court of Alabama. He was a member of the Alabama Legislature from 1884 to 1888, acting as Speaker from 1886 to 1888, and in 1890 was elected Governor of the State, serving until 1894. In 1901 he was appointed United States district judge for the Middle and Northern Districts of Alabama. During his term as judge in this court he several times came in sharp contact with the State officials, as a result of radical railroad legislation passed by the Legislature of Alabama which the State officials undertook to enforce. Judge Jones held that certain of these measures were in direct conflict with Federal laws. In 1897 he acted as chairman of a relief commission in the yellow fever epidemic. He compiled 18 volumes of Alabama Supreme Court Reports, and was the author of State laws regulating employment of military in enforcement of law and suppression of riots.

JONES, William Albert. An American soldier, died Nov. 15, 1914. He was born in St. Charles, Mo., in 1841, and graduated from the United States Military Academy in 1864, being appointed first-lieutenant of engineers in the same year. From 1864 to 1866 he was assistant professor of civil and military engineering, law, ethics, and other branches at the United States Military Academy, at the same time acting as treasurer of the Academy. He served for a time in the sixth corps in the Army of the Potomac in the Civil War, afterwards conducting the United States exploring expedition in northwestern Wyoming and Yellowstone Park. He is supposed to have been the first white man to cross the great range of mountains east of the park. He afterwards assisted in the construction of fortifications, harbors, and lighthouses on the Atlantic coast and on the Great Lakes, and in the improvement of rivers in the Northwest. He served as division engineer of the Chesapeake, and was consulting engineer in the location and construction of railways, etc. He was promoted to be captain in 1867, major in 1882, lieutenant-colonel in 1895, colonel in 1903, brigadier-general and retired in 1905. He served as consulting engineer in the State of California and to the Commonwealth of Massachusetts, and was also a member of several military and learned societies. His published writings include: *Report of Exploration of Northwestern Wyoming and Yellowstone Park* (1874); and *The Salmon Fisheries of the Columbia River*. He also wrote numerous special reports on internal improvement and contributed to professional and other journals.

JORDAN, Chester Bradley. An American public official, former Governor of New Hampshire, died Aug. 24, 1914. He was born in Colebrook, N. H., in 1839; was educated in the public schools of that town and at the Kimball Union Academy at Plainfield; was clerk of the Supreme Court of New Hampshire from 1868 to 1874, and in the following year was admitted to the bar. He was elected to the New Hampshire House of Representatives and in 1881 was Speaker of that body, later becoming a member of the Senate and president of it in 1897. In 1901 he was elected Governor of the State and served until 1903. He was a prominent Freemason and was a member of several patriotic and professional societies.

JOYCE, Patrick Weston. A British public official and scholar, died Jan. 7, 1914. He was born at Limerick in 1827 and was educated privately. In 1845 he entered the service of the Commissioners of National Education in Ireland, and held successive posts until 1874, when he was appointed professor and subsequently principal of the Commissioners' Training College at Dublin, from which post he retired in 1893. He was an approved student of Irish history and was one of the commissioners for the publication of the *Ancient Laws of Ireland*. Among his published writings are: *The Origin and History of Irish Names of Places* (two vols.); *Ancient Irish Music*, a collection of hitherto unpublished Irish airs and songs; *Old Celtic Romances; a Short History of Ireland to 1608;* a *Child's History of Ireland;* and a *Social History of Ancient Ireland* (two vols., 1903).

JUDAISM. See Jews and Judaism.

JUDSON, Edward. An American Baptist clergyman, died Oct. 23, 1914. The son of a noted missionary, Adoniram Judson, he was born at Maulmain, British Burma, on Dec. 27, 1844. He came to the United States in 1850, and was educated at Brown University (A.B., 1865; A.M., 1868). He was principal of Leland and Gray Seminary at Townshend, Vt., in 1865–67, and then served as professor of Latin and modern languages at Madison (now Colgate) University in 1867–74. After traveling in Europe in 1874–75, he was ordained to the Baptist ministry in 1875, and then held a pastorate at Orange, N. J., until 1881. Thereafter he was pastor of the Berean (now Memorial Baptist) Church in New York, and later of the Judson Memorial, which he erected at Washington Square, New York, in memory of his father. He lectured on theology at the University of Chicago in 1904–06, and on Baptist principles and polity at the Union Theological Seminary in 1906–08. He became professor of pastoral theology at Colgate University, which conferred on him the honorary degree of D.D. in 1881, a fellow of Brown University, and a trustee of Vassar College. He is author of *Life of Adoniram Judson* (1883) and *The Institutional Church* (1899).

JUVENILE COURTS. The establishment of special courts for children, begun in Chicago in 1898, has spread to nearly every civilized country. These courts make possible private hearings by a highly intelligent and broadly sympathetic judge, who is able to give wise counsel and individual treatment to the youthful offenders who, under the careless and unintelligent methods of the past, were very likely to become hardened to criminals. The latest development in these courts is the establishment of women judges to hear girls' cases, begun in Chicago in March, 1913. St. Louis followed in January, 1914, by naming two women as assistant judges in the juvenile court.

The report of the Children's Court at Manhattan, issued about July 1, showed that about 25 per cent of the arraignments were for trifling causes; about 38 per cent for improper guardianship; and about 38 per cent for serious charges. Of the 9019 children arraigned during the preceding year, 20 per cent had committed previous offenses. It was found that the fourteenth and fifteenth years are the most common ages for youthful offenders. Of these children, 35 per cent came from broken homes, one or both parents being dead; 54 per cent were involved with associates in crime.

JUNIOR JUVENILE COURT. A unique development of the juvenile court idea was the establishment of the Junior Juvenile Court at Hiram House, a social settlement in Cleveland. This court was suggested by the fact that out of 2380 cases handled by the regular juvenile court of the city in 1913, 552 came from the Hiram House region. The new court was established with the assent of Judge Addams of the regular juvenile court, who appointed three lawyers to act as judges, and commissioned as probation officers 14 Hiram House boys from 13 to 15 years old. These boys are the policemen, reporting every kind of offense from petty gambling or swearing to cigarette smoking and stealing. Summonses are issued under the authorization of the regular juvenile court. The procedure is serious and follows the plan of regular court. The result has been a remarkable transformation of the boy gangs in that district.

DISTRICT OF COLUMBIA. On March 6, 1914, the Attorney-General, having been impressed with the necessity of amending, revising, and codifying the laws in force in the District relating to children and to the jurisdiction and procedure of the Juvenile Court of the District, appointed the following committee to study such laws: Bernard Flexner of Chicago; Miss Julia C. Lathrop, chief of the Children's Bureau; Rev. William J. Kerby of the Catholic University of America; Walter C. Clephane, and William H. Baldwin of Washington. This committee held numerous hearings, but did not complete its report in 1914. It was expected to present a juvenile court law which might serve as a model for the country.

MISSOURI. In May, the Supreme Court of Missouri held the juvenile court law of 1913 applying to every county except the six largest to be unconstitutional. This law gave probate courts sole power to act in cases involving neglected and dependent children. The grounds of the decision were: The Constitution required the duties of probate courts to be uniform throughout the State; and the law, though applying to children committing crimes, did not follow the criminal procedure required by the Constitution. This second ground caused some astonishment in that the court took the older view that children may be criminals.

PHILIPPINES. The Juvenile Protective Association of the Philippine Islands was organized in behalf of the Filipino juvenile delinquents. It is composed of leading American and Filipino residents. It hopes to establish a juvenile court for the Islands and a model reformatory on the cottage system. In December, 1914, it had a building fund of $100,000. It favors also visiting nurses to the homes of juvenile delinquents; children's libraries; probation officers; medical aid and inspection; vocational training; and a modern placing-out system.

Bibliography. New books of the year included: *Review of the Work of the St. Louis Juvenile Court for the Five-Year Period 1908–1913*, prepared by the Court itself; Bernard Flexner and R. N. Baldwin, *Juvenile Courts and Probation;* M. G. Barnett, *Young Delinquents;* G. B. Mangold, *Problems of Child Welfare.*

KAISER-WILHELMS-LAND. That part of German New Guinea (q.v.) which is in New Guinea Island.

KAMERUN. A protectorate of Germany, lying between Nigeria and French Equatorial Africa. The area, including the territory ceded by France in 1911, is estimated at 790,000 square kilometers, or 305,000 square miles. Native population, 3,500,000 (estimate). White inhabitants numbered 1871 on Jan. 1, 1913. Imports and exports in 1911 were valued at 29,317,000 and 21,251,000 marks, respectively; in 1912, 34,242,000 and 23,336,000. Imports from and exports to Germany in 1912, 27,216,000 and 19,841,000 marks. There were 310 kilometers of railway in operation at the end of 1913, and 133 kilometers under construction. Vessels entered in the 1912 trade, 604, of 1,733,030 tons. The budget balanced at 15,344,624 marks for 1913–14. Buëa is the capital.

An Anglo-French force invaded the German protectorate of Kamerun and captured the town of Duala on September 28; and on the following day the French government announced that French forces had taken possession of a large part of the Kamerun. Consult the article on the WAR OF THE NATIONS.

KANSAS. POPULATION. The estimated population of the State on July 1, 1914, was 1,784,897. The population in 1910 was 1,690,949.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	5,850,000	108,225,000	$68,182,000
	1913	7,320,000	23,424,000	18,271,000
Wheat	1914	8,660,000	177,200,000	168,340,000
	1913	6,710,000	86,988,000	68,717,000
Oats	1914	1,760,000	58,960,000	24,763,000
	1913	1,760,000	34,820,000	15,444,000
Rye	1914	50,000	1,000,000	800,000
	1913	45,000	630,000	472,000
Barley	1914	240,000	5,880,000	2,764,000
	1913	240,000	1,994,000	1,069,000
Potatoes	1914	72,000	4,464,000	3,437,000
	1913	73,000	2,920,000	2,657,000
Hay	1914	1,650,000	*a* 2,492,000	18,441,000
	1913	1,500,000	1,350,000	16,875,000

a Tons.

MINERAL PRODUCTION. The coal production in 1913 was 7,202,210 short tons, valued at $12,036,292, compared with 6,986,182 short tons, valued at $11,324,130 in 1912. Coal mining conditions in general were excellent in 1913, there being no serious troubles with labor, and railroad consumption increasing somewhat on account of the strike in the Colorado mines. There were employed in the coal mines of the State in 1913, 12,479 men. The output of coal represents nearly 45 per cent of the total value of the mineral products of the State. The coal production of the State in 1914 showed a slight increase over that of the previous year. Natural gas ranks second to coal in importance, there being produced in 1913 natural gas to the value of $3,288,394, a decrease from $4,264,706 in 1912. The production of Portland cement decreased from 3,592,148 barrels in 1912, to 3,291,818 barrels in 1913, although the value increased from $2,815,113 in 1912, to $3,286,861 in 1913. The mineral product which showed the most significant gain in 1913 was petroleum, which increased from 1,592,796 barrels, valued at $1,095,698 in 1912, to 2,375,029 barrels, valued at $2,248,283 in 1913. The value of the lead and zinc produced at mines in Kansas in 1913 was $1,343,432, compared with $1,680,744 in 1912. The recoverable metallic content of the zinc mined in 1913 amounted to 10,088,000 short tons, valued at $1,129,856, a slight decrease from the production of 1912. Other important mineral industries are salt mining and evaporating, stone quarrying, and the mining and calcining of gypsum. The total value of the mineral products of the State in 1913 amounted to $27,312,563, compared with $26,554,967 in 1912.

EDUCATION. The school population of the State in 1913 was 510,273, the total enrollment 395,064, and the average daily attendance 298,128. The male teachers employed numbered 2639, and the female teachers 11,464, the average monthly salary of teachers being in the rural schools $52.11, and in the graded schools $67.25. The number of school districts in 1912 was 8717. There are over 200 high schools maintaining normal training courses, over 100 high schools offering courses in agriculture and domestic science, and many schools offering commercial courses.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions under the control of the State include Topeka State Hospital, Osawatomie State Hospital, Larned State Hospital, Parsons State Hospital for Epileptics, State Home for the Feeble-minded at Winfield, State Orphans' Home at Atchison, and State Tubercular Sanatorium at Norton. There are in addition many private associations and institutions which are under supervision of the State. The State Hospital for the Insane at Larned was authorized by the Legislature of 1911, and the first buildings were completed and ready for occupancy in 1914. On July 1, 1913, the School for the Deaf, and the School for the Blind were placed under the management of the new State Board of Administration, while the Girls' Industrial School, and the Boys' Industrial School were placed under the management of a new State Board of Corrections. The State Board of Control has the management of the Insane Hospital at Larned, and the State Tubercular Sanatorium at Norton.

FINANCE. The receipts from all sources for the fiscal year ending June 30, 1913, amounted to $8,471,318, and the disbursements to $8,025,250. At the beginning of the fiscal year there was in the treasury a balance of $1,289,209, and at the close of the fiscal year 1913 a balance of $1,735,276. The receipts include the direct State tax, receipts on account of payment of bonds and interest due the several State school funds, fees of State officers, insurance fund receipts, etc. The disbursements include the purchase of bonds and securities by the State School Fund Commission, and the general running expenses of the State and its various educational and benevolent institutions.

TRANSPORTATION. The total mileage of single track line operated in the State on June 30, 1914, was 9492. There were in addition 307 miles of second and third track, and 119 miles of new line were constructed during the year. The roads having the longest mileage in the State are the Atchison, Topeka, and Santa Fe, 2816; Missouri Pacific, 2384; Union Pacific, 1215; and the Chicago, Rock Island, and Pacific, 1166.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. There were elections for United States Senator, members of the House of Representatives, for Governor, and for other State officers. The term of Senator Bristow expired on March 3, 1913. He was a candidate for renomination on the Republican ticket, although for several years he had been identified with the Progressive wing of the Republican party, and had taken an active part in the campaign of 1912 as a supporter of Mr. Roosevelt. Opposed to him for the Republican nomination was Charles Curtis, a Conservative Republican, who six years before had been defeated for reëlection by Senator Bristow. Victor Murdock, the Progressive leader in the House of Representatives, was the Progressive candidate for Senator. At the nominating elections held on August 3, Mr. Curtis defeated Senator Bristow. Congressman G. A. Neeley was nominated by the Democrats for Senator, and Victor Murdock by the Progressives. For Governor, the Republicans nominated Arthur Capper; the Democrats renominated Gov. G. H. Hodges, and the Progressives nominated H. J. Allen. The campaign which followed these nominations was a very spirited one. All the candidates made vigorous campaigns, and on account of division in the Republican party, the chances of the Democrats for success were considered good. In the elections on November 3, however, Capper, the Republican candidate, was elected with 209,543 votes, compared with 161,696 for Hodges, Democrat, and 84,060 for Allen, Progressive. For Senator, Curtis received 180,323 votes, Neeley, Democrat, 176,929, and Murdock, Progressive, 116,755. The total number of votes cast in this election was 528,206, compared with 365,444 in 1912. The larger vote in 1914 is accounted for by the fact that women voted in this election. The Republicans showed a gain of over 100,000 votes; the Democrats a loss of about 20,000, and the Progressives a loss of about 40,000. A constitutional amendment providing for the recall of public officials was adopted at this election by a vote of 240,240 for it to 135,360 against it.

STATE OFFICERS, 1915. Governor, Arthur Capper; Lieut.-Governor, W. Y. Morgan; Secretary of State, J. T. Botkin; Treasurer, Earl Akers; Auditor, W. E. Davis; Attorney-General, S. M. Brewster; Superintendent of Education, W. D. Ross; Superintendent of Insurance, C. J. Wilson; Commissioner of Agriculture, ————;—all Republicans.

JUDICIARY. Supreme Court: Chief Justice, Wm. A. Johnston; Associate Justices, Judson S. West, Silas Porter, Clark A. Smith, Rousseau A. Burch, Henry F. Mason, and Alfred W. Bensen, all Republicans; Clerk, D. A. Valentine.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	21	49	70
Republicans	18	66	84
Progressives	1	9	10
Socialists	0	1	1
Majority	2D	7R	8R

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

KANSAS, UNIVERSITY OF. A State university for higher education at Lawrence, Kan., founded in 1866. The students enrolled in all departments of the university in the autumn of 1914 numbered 2650, and the faculty numbered 202. There were no notable changes in the faculty during the year and no noteworthy benefactions were received. The productive funds of the university amount to about $150,000, and its income to $590,000. The library contains 93,000 volumes. The president is F. Strong, LL.D.

KEAN, JOHN. Former United States Senator from New Jersey, died Nov. 4, 1914. He was born in 1852 at Ursino, Union Co., N. J.; studied at Yale University, but did not finish the course, graduating from Columbia Law School in 1875; he was admitted to the bar, but never practiced. He at once went into business with his father, who had large financial interests, and on the death of the latter inherited great wealth. Early in life he entered politics and was Representative to Congress in 1882; was defeated in 1884, but was again elected in 1886. In 1891 he was elected State chairman of the Republican committee, and a year later was nominated for Governor, but was defeated by the Democratic candidate. In 1889 he was elected United States Senator and was reëlected for the term 1905–11. In the Senate he very seldom spoke, but was a potent factor in shaping corporation legislation especially as it applied to railroads, serving on the Committee on Interstate Commerce with Senators Aldrich, Elkins, and Crane.

KEDDIE, HENRIETTA. A Scottish novelist, died Jan. 8, 1914. She was born at Cupar, Scotland, in 1827, and was educated at home. From 1848 to 1870 she conducted with her sister a boarding and day school for girls, and from 1870 to 1884 she lived in London where she engaged in literary work, afterwards making her home at Oxford. She wrote many novels, some of which achieved considerable popularity. The best known are: *Citoyenne Jacqueline* (1865); *French Janet* (1889); *The Macdonald Lass* (1895); *Women Must Weep* (1901); *The Girls of Inverbarns* (1906); *Three Generations* (1911).

KEKEWICH, ROBERT GEORGE. An English soldier, died Nov. 5, 1914. He was born in 1854 and entered the army at the end of 1874. He served with the Nile Expedition of 1884–85, and in Burma in 1892; his fame as a soldier, however, was won by his successful defense of Kimberley in the South African War. When the Boers besieged the town General Kekewich commanded about 800 mounted men and nearly 3000 foot soldiers, but was handicapped by a great deficiency of food, ammunition, arms, and artillery. Means of communication with the outside world were cut on Oct. 15, 1899; the actual siege began on November 6th, and was not raised until February 16th, when Sir John French relieved the town. Several months before his death General Kekewich was in command of a division of the British army. He was, however, in ill health and was obliged to undergo treatment in a hospital. He died by his own hand, probably on account of depression resulting from his inability to take part in the European War.

KELLOGG, AMOS MARKHAM. American editor and educator, died Oct. 31, 1914. He was born in Utica, N. Y., in 1832, and graduated from the Albany State Normal School in 1851. From 1852 to 1856 he was instructor in several normal schools, and in the latter year became principal of the New Jersey Preparatory Normal School. From 1858 to 1860 he conducted the Teachers' Institute in Michigan, and after acting as principal for several schools in that State, became in 1874 editor of the *School Journal*, and continued in this capacity until 1904. He was also editor of several educational journals, and wrote many text books, including: *School Management* (1877); *How to Manage Busy Work* (1897); *How to Teach Botany* (1897); *How to be a Successful Teacher* (1901); *Elementary Psychology* (1894); *Nature Study* (1900).

KELLOGG, EDGAR ROMEYN. American soldier, died Oct. 7, 1914. He was born in New York City in 1842, and received a public school education. He served throughout the Civil War, rising to the rank of captain, and after the close of the war was appointed captain in the Twenty-fifth Infantry, rising through various grades until he became colonel of the Sixth Infantry. In 1898 he was appointed brigadier-general of volunteers, and in the following year was retired with the rank of brigadier-general, U. S. A., after thirty years of service, having received three brevets for gallantry during the Civil War.

KELLY-KENNY, SIR THOMAS. A British soldier, died Dec. 26, 1914. He was born in 1840 at Kilrush, County Clare, Ireland, and in 1858 entered the army as ensign in the Second Foot. Two years later he served in China, and afterwards in Abyssinia and in India, rising to the rank of adjutant-general. In 1897 he was appointed Inspector General of Auxiliary Forces and Recruiting, serving until 1899, when he was placed in command of the troops at Aldershot. From 1899 to 1901 he was lieutenant-general on the staff in command of the Sixth Division of the South African Field Forces and was twice mentioned in dispatches. From 1901 to 1904 he was Adjutant General of the Forces and in 1907 retired.

KENTUCKY. POPULATION. The estimated population of the State on July 1, 1914, was 2,350,731. The population in 1910 was 2,289,905.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	3,650,000	91,250,000	$58,400,000
	1913	8,650,000	74,825,000	56,867,000
Wheat	1914	760,000	12,540,000	12,916,000
	1913	725,000	9,860,000	9,466,000
Oats	1914	175,000	3,675,000	1,948,000
	1913	160,000	3,168,000	1,647,000
Rye	1914	22,000	301,000	286,000
	1913	22,000	273,000	288,000
Potatoes	1914	50,000	2,250,000	1,890,000
	1918	50,000	2,450,000	2,499,000

		Acreage	*Prod. bu.*	*Value*
Hay	1914	750,000	*a* 712,000	11,892,000
	1913	775,000	674,000	11,121,000
Tobacco	.1914	400,000	*b* 364,000,000	30,576,000
	1913	370,000	281,000,000	28,129,000

a Tons.
b Pounds.

MINERAL PRODUCTION. The coal production of Kentucky in 1913 was 19,616,600 short tons, valued at $20,516,749. Kentucky is one of the 12 States that in 1913 established a new record in the quantity and value of its coal production; and in the percentage of increase Kentucky surpassed all States. The increase in quantity mined amounted to 3,126,079 short tons, or 19 per cent, and the value increased $3,662,542, or 21.7 per cent. Nearly 80 per cent of the increase in 1913 was in the eastern counties. Until 1912 the larger portion of the coal produced was mined in the western counties, but the increases aggregating more than 4,200,000 tons in the eastern counties during the last two years have given the supremacy to that portion of the State. The number of men employed in the coal mines of Kentucky increased from 24,304 in 1912, to 26,332 in 1913. Kentucky, unlike most coal-producing States, showed a small increase during 1914, according to the estimates of the United States Geological Survey. This was due almost entirely to the great developments which have taken place in the eastern part of the State during the last two or three years. The total production is estimated at approximately 20,000,000 tons. There were no labor troubles of importance in the State during the year. Coke is manufactured from coal mined in both eastern and western parts of the State. The production increased from less than 50,000 tons in 1909 to 191,555 tons in 1912, and to 317,084 tons in 1913. During 1913 a plant of 54 Semet-Solvay by-product ovens and 50 new beehive ovens were constructed, and by a coincidence 104 ovens were abandoned, so that the total number in existence at the close of 1913 was the same (1049) as at the close of 1912. The clay-working industry is second in importance. The total value of the manufactured clay products in 1913 was $2,914,276, an increase of $470,536 over 1912. The quarrying industry is third in importance, with products in 1913 valued at $1,150,205, compared with $1,282,148 in 1912. The principal product is limestone, most of which is crushed for road making, railroad ballast, and concrete. The production of petroleum in the State increased from 484,368 barrels, valued at $424,842, in 1912 to 524,568 barrels, valued at $675,748, in 1913, while the value of the natural gas produced decreased from $522,455 to $509,846. Kentucky is one of the few States in which fluorspar is produced, and in 1913 the output was nearly double in quantity and value that of 1912. Other mineral products are asphalt, cement, iron ore, lead, lime, mineral waters, oilstones, sand and gravel, sand-lime brick, and zinc. The total value of the mineral products increased from $22,477,530 in 1912 to $26,845,579 in 1913.

TRANSPORTATION. The railway mileage of the State on June 30, 1913, was 3789. There were 493 miles of electric railways in 1912. The longest lines in the State are the Illinois Central, 271, and the Cincinnati, New Orleans, and Texas Pacific, 197.

EDUCATION. The total school population in 1914 was 725,204, the enrollment 517,299, and the average daily attendance in schools 362,602, the total number of teachers being 11,300. The average monthly salary of male teachers was $52.47, and of female teachers $43.92. Disbursements for educational purposes for rural schools in 1913 amounted to $4,390,507, and for city schools, $2,248,964. The most important school legislation passed by the legislature of 1914 was a measure pertaining to certification; under this act first-class county certificates may be validated by the State Board of Education for use in any county in the State; and teachers having taught 20 consecutive years under no certificates of less grade than first class certificate, may obtain a life certificate through the State Board of Education; certificates from other States may be accepted in Kentucky on the reciprocity plan.

CHARITIES AND CORRECTIONS. The charitable institutions are under the supervision of the State Board of Control. With their populations in 1913 they are Eastern State Hospital, Lexington, 1132; the Central State Hospital, Lakeland, 1500; the Western State Hospital, Hopkinsville, 1100; and the Kentucky Institution for Feeble-minded Children at Frankfort, 321. The correctional institutions are under the control of the State Prison Commission.

FINANCE. The report of the State treasurer for the fiscal year ending June 30, 1913, shows a balance in the treasury on July 1, 1912, of $300,549. The receipts for the fiscal year amount to $7,666,781. The disbursements for the period were $7,605,427, leaving a balance on June 30, 1913, of $361,903. The total debt of the State in 1913 was $4,452,000. The per capita debt was $1.90.

POLITICS AND GOVERNMENT. The State Legislature met in 1914 as the sessions are biennial in the even years, but most of the legislation was of local interest. The House of Representatives on March 13 put itself on record as being absolutely opposed to granting the voting privilege to women by vote of 51 to 29, defeating a resolution submitting to the people an amendment to the State constitution, allowing women to vote. A measure submitting a State-wide prohibition amendment to the constitution to the people was also defeated by the Legislature. On May 30 Governor McCreary appointed Johnson N. Camden United States Senator to fill the vacancy caused by the death of Senator W. O. Bradley. It was necessary to elect two United States Senators, one for the unexpired term of Senator Bradley, to fill which, as noted above, J. N. Camden was appointed, and another for the full term beginning March 4, 1915. For the long term the candidates were J. C. W. Beckham, Democrat, who received 176,605 votes, and A. E. Willson, Republican, who received 144,758 votes, both former governors of the State. For the unexpired term the candidates J. N. Camden, Democrat, got 177,797 votes, and W. M. Bullitt, Republican, got 133,139 votes. The total number of votes cast at this election was 340,361, compared with 453,698 in 1912. The Democratic vote showed a loss of about 40,000 and the Republican a gain of about 30,000. The Progressives showed a falling off of 88,658 votes.

STATE OFFICERS, 1915. Governor, James B. McCreary; Lieutenant-Governor, Edward J. Mc-

Dermott; Secretary of State, C. F. Crecelius; Treasurer, Thomas S. Rhea; Auditor, Henry M. Bosworth; Attorney-General, James Garnett; Superintendent of Public Instruction, Barksdale Hamlett; Commissioner of Agriculture, James W. Newman; Commissioner of Insurance, M. C. Clay—all Democrats.

JUDICIARY. Court of Appeals: Chief Justice, J. P. Hobson, Democrat; Justices, W. E. Settle, Democrat; C. C. Turner, Democrat; J. B. Hannah, Democrat; John D. Carroll, Democrat; C. S. Nunn, Democrat; Shackelford Miller, Democrat; Clerk, Robt. L. Greene, Democrat.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	32	78	110
Republicans	6	21	27
Fusion	0	1	1
Democratic majority	26	56	82

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

KHUEN-BELASI-HEDERVARY, KAROLY (CHARLES), COUNT. A Hungarian statesman, died April 25, 1914. He was born in Freiwaldau, Upper Silesia, on May 23, 1849. His long public career began in the county of Veröcze, where he was elected to the Landtag of Agram in 1870. In 1875 he was sent by a Croatian constituency to the Hungarian Reichstag, where he sat as a member of the Liberal party. He became count of Raab in 1879, and in 1883 Viceroy or Governor of Croatia, Slavonia, and Dalmatia, an office that he held for nearly 20 years. In this position he built up a strong government party, and made noteworthy reforms in administration and education; but the opposition party complained continually of his censoring of the press, influencing elections, and interfering with public assemblies by virtue of the powers of his office. In 1894 and again in 1895 he was nominated by the crown for the Hungarian premiership, but on each occasion the Liberal party of Hungary refused to accept him. On June 26, 1903, he succeeded Szell to the presidency of the ministry, but when the Reichstag met in October they voted a want of confidence, and his premiership came to an end November 3. In March, 1904, he entered the cabinet of his successor, Tizra, as minister without a portfolio, but left office on the fall of that ministry in June, 1905. On Jan. 17, 1910, he succeeded Wekerle as premier, but the defeat of his reform measures for national defense, and the discord between the war ministry and the government party led to the dismissal of his ministry on April 17, 1912. He was succeeded by Ladislaus von Lukács.

KIAOCHOW. A harbor, town (Tsingtao), and district on the east coast of the Chinese province of Shantung, leased by Germany from China for 99 years from March 6, 1898. The district was declared a German protectorate in April, 1898. Area, exclusive of the bay, 552 square kilometers (213 square miles). The native population is estimated at 190,000. Whites numbered Jan. 1, 1913, 4470. A neutral zone, or rather a German sphere of influence surrounds the district and bay to a distance of 31 miles from high-water mark, embracing about 2500 square miles, with an estimated population of 1,200,000. At Tsingtao, the port of Kiaochow, imports and exports in the fiscal year 1912 were valued at 114,938,000, and 80,295,000 marks respectively; in the fiscal year 1913, 121,254,000 and 79,640,000. Vessels entered at Tsingtao in the 1910–11 trade numbered 614, of 1,071,000 tons. A railway extends from Tsingtao to Tsinan, the capital of Shantung, 271 miles, with a branch line of 30 miles to Poshan. The railway is controlled by the Shantung Mining Co., which operates coal mines at Fangtse and Poshan, and iron mines at Tchinlingchen. The 1913–14 budget balanced at 16,787,625 marks, including 9,507,780 marks imperial subvention. Tsingtao is the administrative headquarters. Captain Meyer-Waldeck was Governor in 1914, under the direction of the Department of Marine. See WAR OF THE NATIONS, *Military Operations.*

KIEL CANAL. See CANALS.

KIKUYU. See ENGLAND, CHURCH OF.

KING, ALBERT FREEMAN AFRICANUS. An American physician, died Dec. 6, 1914. He was born in England, Jan. 8, 1841, the son of Dr. Edward King. He came to the United States, graduated at Columbia University in 1861, and in medicine at the University of Pennsylvania in 1865. He was acting assistant surgeon, United States army in 1864. He was professor of obstetrics and diseases of women and children in the medical department of Columbian University (1871–1913), and in the University of Vermont (1871–1913), and was president of the Washington Obstetrical and Gynecological Society in 1885–87. He was dean of the Medical School, Columbian University, in 1879–94. He early advocated with energetic confidence the theory that malaria is transmitted by the mosquito. This claim, republished in 1883, was accepted by the medical world in 1899. He first advocated the present system of personal and municipal prevention of the propagation of disease by insects. He was elected a member of the Royal Society of Medicine, London; a member of the American Gynecological Society; of the Washington Academy of Sciences; and a Fellow of the American Association for the Advancement of Science. He published: *A Manual of Obstetrics* (1882, 11th ed., 1910); and *Mosquitoes and Malaria* (1883).

KINGSBURY, OLIVER ADDISON. An American Presbyterian clergyman and writer, died May 5, 1914. He was born in New York City in 1830, and graduated from Yale in 1860; then studied theology at the Union Theological Seminary, and from 1865 to 1873 was pastor of churches in Connecticut, Illinois, and New York. From 1873 until 1889 he was editor of the *Illustrated Christian Weekly*, and in 1891 was called to the pastorate of the First Presbyterian Church of New Hartford, N. Y., where he remained until he was retired as pastor emeritus in 1912. He was the author of many contributions to religious periodicals as well as of several books.

KITCHENER, FIELD MARSHAL EARL. See GREAT BRITAIN, *History, passim*, and WAR OF THE NATIONS, *passim.*

KLUCK, ALEXANDER HEINRICH RUDOLF VON. See WAR OF THE NATIONS.

KNUTSFORD, HENRY THURSTAN HOLLAND, first VISCOUNT. An English politician and public official, died Jan. 29, 1914. He was born in 1825, and was educated at Harrow and Cambridge. In 1849 he was called to the bar, but did not actively practice, becoming engaged in official work in connection with the Colonial Office, originally as legal adviser, and in 1870 as Under-Secretary. In 1874 he was elected member of Parliament and remained there until 1888 when he was raised to the peerage. He served as financial secretary to the Treasury and as vice-president of the Council on Education. He entered the Cabinet as Secretary of State for the Colonies, an office which he held until the Unionist Cabinet resigned after the general election of 1892.

KÖNIGSBERG. See NAVAL PROGRESS.

KOPP, GEORG. A German Roman Catholic Cardinal, died March 4, 1914. He was born in 1837, and in 1856 entered the Civil Service of the Kingdom of Hanover as an official in the telegraph department, but gave up this post for the priesthood. In 1872 he was made a canon of the cathedral and vicar-general of the diocese of Hildesheim; nine years later was appointed Bishop of Fulda. In 1884 he was nominated a member of the Council of State, and in 1886 after the agreement between Germany and the Vatican, following on the arbitration on the Caroline Islands, he was called to a seat in the Prussian Upper Chamber. In 1887 he became Prince-Bishop of Breslau, one of the largest dioceses in North Germany, including within its confines the city of Berlin. This position was one of preëminence in the Catholic Church in the German Empire. In 1893 he was made cardinal.

KOREA, or officially CHOSEN. Formerly an independent monarchy occupying the peninsula between the Sea of Japan and the Yellow Sea; it became a Japanese protectorate March 2, 1906, and was annexed to Japan Aug. 29, 1910. Capital, Seoul.

AREA, POPULATION, ETC. The estimated area is 14,123 square ri (84,606 square miles). The population in 1913 was estimated at 15,164,066. The official estimate of Dec. 31, 1911, was 14,055,869, as compared with 13,299,699, the estimate of Dec. 31, 1910. At the end of 1911, males numbered 7,397,994, and females 6,657,875; of the total, Koreans numbered 13,832,376 (7,271,526 males, 6,560,850 females); Japanese 210,689 (114,759 males, 95,930 females); foreigners (chiefly Chinese), 12,804 (11,709 males, 1095 females). Estimated native population of the larger towns at the end of 1911: Seoul, 223,381; Fusan, 72,947; Kwangju, 42,910; Pingyang, 39,769; Haisyöng, 38,025; Taiden, 32,822; Taiku, 31,140; Chemulpo, 26,187; Wönsan, 20,093; Chingnampo, 17,546; Luju, 17,391; Yongsan, 17,307; Haiju, 16,163; Hamheung, 14,434; Kongyöng, 13,857; Jenju, 13,814; Yongampho, 13,371; Jinju, 12,102. Ancestor worship prevails throughout the country. Christianity has made considerable progress, the number of native Christians in 1910 being reported at about 250,000. The Japanese have undertaken the reorganization of the primary-school system, and the establishment of industrial and technical schools.

PRODUCTION, COMMERCE, ETC. Agriculture is the only productive occupation of importance, but cultural methods are primitive, and transportation facilities inadequate. The leading crops are rice and other cereals, beans, hemp, ginseng, tobacco, and cotton. Stock raising is a long-established industry. Sericulture is increasing in importance. Gold mining is carried on with some success. Iron, coal, and copper are abundant, but these minerals are not yet worked to any great extent.

Imports and exports of merchandise were valued in 1911 at 54,087,682 yen and 18,856,955 yen, respectively; in 1912, 67,115,447 and 20,985,617. Imports and exports of specie and bullion in 1911, 4,739,245 and 12,857,023; in 1912, 1,472,528 and 10,124,232. Leading imports are cotton piece goods, cotton yarns, timber and lumber, kerosene, sugar, coal, wheat and flour, mattings, etc., galvanized iron, rails, cigarettes, salt, paper, salt fish, and sake. Chief exports of merchandise in 1911 and 1912, respectively, in thousands of yen: Rice, 5284 and 7525; beans (daizu), 4362 and 5001; cattle hides, 1069 and 1032; fertilizer, 374 and 497; raw cotton, 237 and 341; coal, 376 and 334; iron and copper ore, 279 and 315; gold ore, 235 and 275; live animals, 704 and 208; red ginseng, 67 and 262; dried fish, 96 and 214; fresh fish, 134 and 138; salt fish, 53 and 69; azuki (*Phaseolus radiatus*), 245 and 183; seeds of *Perilla ocymoides*, 137 and 216; graphite, 132 and 165. Imports and exports of merchandise by principal countries in 1912, in thousands of yen: Japan, 40,756 and 15,369; China, 7027 and 4058; United Kingdom, 9802 and 198; United States, 6460 and 96; Germany, 1592 and 6.

COMMUNICATIONS. At the beginning of 1914 Korea had about 970 miles of railway, 133.2 miles of line having been opened in the year 1913. On August 16 the entire Keigen line from Seoul to Gensan was thrown open to traffic upon the completion of the section from Seoul to Kozan, 17 miles in length. This makes a total length of about 138 miles for this railway, which traverses the provinces of Kyeng-Ki, Kang Won, and South Hamgyeng. The trains from Seoul to Gensan make this journey in about eight hours, and the last named city is the chief city on the east coast, occupying the third place in foreign trade among the open seaports of Korea.

On September 6 the Seoul-Gensan Railway was formally opened, having been in active construction since October, 1910, although it had been begun previously at the time of the war. This line crosses the peninsula east and west, and is 141 miles in length.

The length of railway open to traffic in 1913 was reported at 1345 kilometers (836 miles); telegraph lines, 6018 kilometers, with 15,317 kilometers of wire; telephone lines, 4011, with 27,971 kilometers of wire; post offices, 567.

FINANCE. The monetary unit is the yen, par value 49.846 cents. The revenue and expenditure for the year 1910–11, together with budget estimates for 1912–13 and 1913–14, are shown below, in yen:

	1910-11	*1912-13*	*1913-14*
Rev. ordinary ...	11,610,226	26,732,332	30,106,163
Rev. extraord. ..	10,368,475	26,159,877	27,883,447
Total rev.	21,978,701	52,892,209	57,989,610
Exp. ordinary ...	9,471,936	30,232,490	34,751,104
Exp. extraord. ..	8,343,719	22,659,719	23,238,506
Total exp.	17,815,655	52,892,209	57,989,610

The subvention from the Japanese treasury was 2,885,000 yen in 1910–11, and in each of the two succeeding years was estimated at 12,350,000 yen. Chief items of estimated ordinary revenue for 1913–14: Taxes, 12,485,372 yen; proceeds of government enterprises, etc., 14,824,557; stamps, 1,145,658. For the fiscal year 1914–15, the estimated revenue (including subvention) and expenditures were reported to balance at 59,412,966 yen.

GOVERNMENT. Upon its annexation to Japan in 1910, Korea was placed under the administration of a Governor-General, Gen. Viscount (later Count) Terauchi Masakata, who continued to hold the office in 1914. Civil Governor-General, Yamagata Isaburo. Each of the 13 provinces is administered by a Governor.

KOSSUTH, FRANCIS. A Hungarian statesman, died May 25, 1914. He was born in 1841, the son of Louis Kossuth, the great Hungarian patriot. His father at the time of the birth of Francis was the editor of the chief organ of the Liberal party and had nearly attained the height of his importance, so that he was beginning to attract the adverse attention of the government. The boy was educated in Budapest, and while still a youth was sent to Paris to receive a technical education; after taking his degree as engineer, he worked in England on the Forest of Dean Railway, and from there, in 1861, he went to Italy, where for the next 33 years he practiced his profession. During the period of his engineering work, however, he carried on his father's propaganda in a series of newspaper and magazine articles, and also lectured on political freedom. He was twice elected a member of the Hungarian Parliament in 1867, but on both occasions declined to serve. In 1876 he married in Italy Miss Emily Hoggins, an English woman. His work as an engineer gained such a reputation for him that, in 1885, the Italian government decorated him for his services in railway construction. His last great engineering feat was the construction of steel bridges across the river Nile. He was with his father at the time of the latter's death at Turin in March, 1895, and he accompanied the remains of the patriot back to Budapest, where he was enthusiastically greeted by the Hungarian Independents and acclaimed the natural successor of his father to the leadership of that party. He immediately began to take an active part in Hungarian politics, writing, lecturing, and leading in the conclaves of his party. In 1896 he was elected to the Diet, but as his party was in the minority his power except in party matters was not great. In 1905, however, the elections sent his party back to the Diet with a large majority and his influence extended even to the King. He was received in audience by the Emperor Francis Joseph, and helped to construct the Wekerle ministry, of which Kossuth was Minister of Commerce. For four years, under the leadership of Kossuth, the Independents continued in power, but in 1909 he advocated a measure establishing a Hungarian national bank and in the party caucus was able to obtain only 74 votes, while 120 voted against him. He immediately resigned his leadership and his seat in the Diet, and, with his influence gone, the Independents lost control of the Parliament. From this time his activity in politics diminished. From 1899 until his death he was practically an invalid. He edited several volumes of Louis Kossuth's memoirs, and wrote several scientific papers; for years he contributed editorial articles to political newspapers, and wrote also on the subject of Hungarian independence in English, French, German, and American periodicals. He was an accomplished linguist, reading and writing six European languages. He also had considerable ability as a painter.

KRUPP. The Fried. Krupp Aktien Gesellschaft during 1914 increased its share capital by 70,000,000 marks, raising it from 180,000,000 marks (£9,000,000) to 250,000,000 marks, thus making it the second largest German limited liability company, second only in the amount of share capital to the Deutsche Bank. The entire new capital, of which half was to be paid in before the end of 1915, was taken over by the Krupp family. The Krupp Company paid the following dividends from 1906–07 to 1913–14: 1906–07, 10 per cent; 1907–08, 1908–9, 1909–10, 8 per cent; 1910–11, 10 per cent; 1911–12, 12 per cent; 1912–13, 14 per cent; 1913–14, 12 per cent.

KURIA MURIA ISLANDS. Attached to Aden (q.v.).

KWANGCHOW-WAN. A division of French Indo-China (q.v.).

KWANTUNG. A Japanese leasehold in the southern part of the Liaotung Peninsula (Manchuria). Kwantung is the Chinese name, the Japanese name being Kwanto. The area is 1221 square miles. The estimated population at the end of 1911 was 488,136, or, including certain persons in Manchuria who, though outside of Kwantung, were regarded as residents thereof, 547,145; as compared with 519,836 in 1910, and 384,755 in 1906. Of the 1911 population (488,136), Chinese (or Manchus) numbered 446,760, Japanese 41,260, foreigners 116. In 1910, the population of Dairen, the chief port, was 40,758; Ryojun (Port Arthur), 16,797. In 1911, imports and exports were valued at 42,274,722 yen and 47,416,047 yen, respectively; in 1912, 58,198,107 and 55,306,297; in 1913, 55,036,000 and 66,209,000. The trade is chiefly with Japan. Kwantung forms a customs district under the Chinese Maritime Customs. Railway in operation, about 80 miles. In 1910–11, the revenue amounted to 4,273,473 yen (including subvention 3,000,000), and the expenditure to 3,451,488; for 1913–14, estimated revenue, 5,739,684 yen (including subvention 3,047,800), and estimated expenditure, 5,697,328. Kwantung is administered by a Governor-General, resident at Ryojun (Lieut.-Gen. Baron Fukishima in 1914).

LABOR. In spite of the European War, the year 1914, especially in the United States, was one of much importance in the development of labor problems. The radical theories presented by the Industrial Workers of the World (q.v.), or various brands of Syndicalism (q.v.), were less prominent than in the immediately preceding years. The year was notable, however, for several strikes of most extraordinary bitterness, described under Strikes and Lockouts (q.v.). In the article on Trade Unions (q.v.) will be found an account of the movement of organized labor in various countries. The industrial problems connected with women and children are treated under CHILD LABOR; MINIMUM WAGE; PENSIONS FOR MOTHERS; and WOMEN IN INDUSTRY. Other phases of the labor problem will be found under: ARBITRATION AND CONCILIATION, INDUSTRIAL; BOYCOTT; CHILD LABOR; INJUNCTION; INDUSTRIAL RELATIONS COMMISSION; FACTORY INVESTIGATION COMMISSION; LABOR, AMERICAN FEDERATION OF; LABOR LEGISLATION; LABOR LEGISLATION, AMERICAN ASSOCIATION

FOR; OCCUPATIONAL DISEASES; OLD-AGE PENSIONS; and WORKMEN'S COMPENSATION.

WAGES AND HOURS. *Bulletin No. 150* of the United States Bureau of Labor Statistics contained data relating to "Wages and Hours of Labor" in the cotton, woolen, and silk industries, 1907–13. As to cotton-goods manufacturing, this report showed that the average full-time weekly earnings of employees were 1.4 per cent higher in 1913 than in 1912, 14.7 per cent higher than in 1911, and 15.3 per cent higher than in 1910. Full-time hours per week showed no appreciable change between 1912 and 1913, but were 1.7 per cent lower in 1913 than in 1910 or 1911. In cotton-goods finishing, full-time weekly earnings in 1913 were 0.5 per cent lower than in 1912, but 1.2 per cent higher than in 1911. Full-time hours per week had varied little. In woolen and worsted mills, full-time weekly earnings were 2.2 per cent lower in 1913 than in 1912, and 7.8 per cent higher than in 1911, and 8.1 per cent higher than in 1910. Regular full-time hours per week in 1913 were 1.6 per cent lower than in 1910. In the silk-goods industry, full-time weekly earnings in 1913 were 5.6 per cent higher than in 1912, 8.8 per cent higher than in 1911, and 10.1 per cent higher than in 1910. Full-time hours per week in 1913 were 1.4 per cent lower than in 1910. Thus wages per hour were 5.8 per cent higher in 1913 than in 1912, 10.1 per cent higher than in 1911, and 11.7 per cent higher than in 1910.

Another report of the United States Department of Labor gave the union scale of wages and hours in the bakery, building, metal, and printing trades, including 49 occupations. The report covered 40 cities in 32 States. The wages and hours considered were those agreed to by an employer and an organization of union men. Taking the index number of wages per hour for 1913 as 100, the index for 1912 was found to be 97.0; for 1911, 95.2; for 1910, 93.1; for 1909, 90.2; for 1908, 88.6; for 1907, 84.8. It was shown that in these seven years union wages have either risen or not declined at times when prices of commodities had fallen; in general it was believed that union wages had risen faster than prices of commodities during this period from 1907–13.

A third Federal report showed that the average full time weekly earnings of the employees in lumber manufacturing were 3.4 per cent higher in 1913 than in 1912, and 5.4 per cent higher in 1913 than in 1910. Hours of labor were slightly lower than in previous years, and earnings per hour in 1913 were 5.7 per cent higher than in 1910. In mill work rates of wages per hour were 6.2 per cent higher than in 1910; while in furniture manufacturing in 1913 rates per hour were 7.9 per cent higher than in 1910. In these two latter industries the full time weekly earnings were respectively 5.4 per cent and 4.1 per cent higher in 1913 than in 1910.

Set over against these official reports was an analysis made by I. M. Rubinow in *The American Economic Review* of the relation of prices and wages as shown by official reports. He drew the conclusion that the wage earners of America have been able to raise their standard of living and to lead somewhat easier lives during the last 30 or 40 years. This favorable result, however, has been due to the decline in the number of children demanding support, and the increase in the employment of women, thus increasing the sources of income. He concluded that the purchasing value of wages had increased slightly between 1870 and 1890, but had fallen rapidly since 1900, so that real wages were not much higher in 1913 than in 1870. In other words, labor receives no larger return for its effort than three decades or more ago; but the enormous increase in industrial productivity together with smaller families and the increase in number of wage earners per family has resulted in an elevation of standards of living in the industrial population.

ROCKEFELLER INVESTIGATION. About October 1 the Rockefeller Foundation, to which Mr. John D. Rockefeller had given a trust fund of $100,000,000, announced that it would undertake an investigation of industrial conditions throughout the world. For this purpose it secured as director Mr. W. L. Mackenzie King, formerly Minister of Labor in Canada, and author of the Canadian Industrial Disputes Act. It was stated that this inquiry would seek to ascertain the causes of the bitter opposition between labor and capital and to bring forward means of promoting harmony. It declared this "the most complicated and the most urgent problem of modern times," and requested the coöperation of employers, labor unions, universities, and governments in carrying on its investigation in all principal industrial nations. Although the immediate incentive for this inquiry was the excessive bitterness of the Colorado strike in which the Rockefeller interests had been involved (see STRIKES), nevertheless the matter had been under consideration for several years previous, and it was announced that the spirit of the investigation would be thoroughly scientific, and comparable to that of the Rockefeller Institute for Medical Research. See also under RELIEF FOR WAR VICTIMS.

ALIEN LABOR LAWS. About 1897 the New York Legislature enacted a law requiring that only citizens be employed on State and city construction work, and that New York State citizens be given preference for such work; severe penalties were imposed for violations. For many years the law had been treated as a dead letter, and its constitutionality generally doubted. Acting on behalf of trade unionists, the Bricklayers' and Masons' Union on November 17 demanded the application of this law to the work on the new system of subways under construction in New York City. This required the discharge of 18,000 aliens, and had the effect of seriously hampering the work. On November 18 the contractors decided to obey the law; but suits were at once begun to test the validity of the statute. Justice Newburger of the Supreme Court on December 8 upheld the constitutionality of the law and its application to subway work; but by a unanimous decision of the Appellate Division of the Supreme Court the law was declared inapplicable to subway contracts on the ground that these were not public works within the meaning of the law; that the city was building them through contractors, not as a branch of the sovereign power, but as a proprietor.

In the November election Arizona had adopted by referendum vote a law requiring that every pay-roll containing five or more names should contain not less than 80 per cent of qualified voters. Protest against this law was made officially by Great Britain, Italy, and Austria-Hungary as in violation of the treaty rights of their subjects. Japan also showed considerable interest. In December the Federal District Court for Arizona issued a temporary injunction restraining the State from enforcing the law. This was made permanent by the Circuit Court at San Francisco on Jan. 7, 1915, the law being held unconstitutional because in violation of the 14th Amendment. The court held that no State under the guise of its police power could deprive a man of his right to labor guaranteed by that amendment. "The Supreme Court of the United States has held that the right to labor is a right to property. An alien cannot be deprived of the right of property under the Federal Constitution."

LABOR, AMERICAN FEDERATION OF. This body is the most extensive group of organized labor in the United States if not in the world. It is organized on the basis of individual trade union autonomy, in so far as consonant with the interests of organized labor in general. It has uniformly opposed radical labor movements such as socialism and syndicalism, and its president, Samuel Gompers, is an able and vigorous opponent of compulsory arbitration. The strike is believed to be an important and necessary weapon in trade-union policy; so also the boycott (q.v.). The Federation has not affiliated with any political party, but has at various times thrown its influence against members of Congress and State Legislatures who have manifested hostility to trade unionism. However, the Federation has been an effective advocate of legislation before Congress. For an account of the Contempt Case involving leading Federation officers, see INJUNCTION.

Among its present policies are the following: Free schools, free textbooks, and compulsory education; reduction of the powers of the courts in the issuance of injunctions in labor disputes (see TRADE UNIONS, *Clayton Bill*); an eight-hour day; one day's rest in seven; the abolition of the contract system on public work; municipal ownership of public utilities; the abolition of the sweat-shop; sanitary inspection of factory, mine, and home; nationalization of telegraph and telephone; the protection of child labor; equal woman suffrage; plentiful playgrounds in all cities; the initiative, referendum, and recall; the prohibition of interstate trade in convict-made goods; old-age pensions for all civil service employees; prohibition of so-called scientific management schemes in public service; minimum wage legislation.

MEMBERSHIP. For the year ending Sept. 30, 1914, the Federation had an average paying and reported membership of 2,020,671, an increase of 24,667 over the preceding year. This membership was distributed among 110 national and international unions, 570 local trade and Federal labor organizations, 43 State federations, and 670 city central bodies. All told there were 21,460 local unions. The central headquarters at Washington include the following five departments: Building trades; metal trades; union label; mining; and railroad. The funds available for the year were $366,230; expenditures, $265,737. There were in the field 1760 Federation organizers, of whom about 1700 were volunteer workers.

LABOR EXCHANGES. See under the article UNEMPLOYMENT the paragraphs on *Public Employment Exchanges.*

LABOR LEGISLATION. All of the 11 States that held regular sessions in 1914 passed laws relating to labor, as did the 63d National Congress. For legislation not treated below, see ARBITRATION AND CONCILIATION; CHILD LABOR; OLD-AGE PENSIONS; TRADE UNIONS; INJUNCTION; MINIMUM WAGE; UNEMPLOYMENT; WORKMEN'S COMPENSATION; and WOMEN IN INDUSTRY. The Industrial Relations Commission and the Factory Investigating Commission of New York are treated under separate heads.

ADMINISTRATION. Although there were no changes from the old style labor department to the commission form during the year, yet special commissions or boards to administer compensation laws were created in Kentucky, Maryland, and New York. (See WORKMEN'S COMPENSATION.) Likewise, there were special boards created for the handling of definite phases of the labor problem. For the enforcement of the recent law passed by Congress regulating women's work in the District of Columbia, a new inspection staff has been established. Also Louisiana, Mississippi, New York, and New Jersey have provided for additional inspectors in connection with the administration of child labor laws, and in Massachusetts a factory investigator has been appointed. Besides granting the Board of Labor in Massachusetts more powers, the Legislature has ordered the commission to present a compilation of the laws relating to labor, and to call attention to any changes that should be made. Coming to realize the necessity for trained men in the carrying out of the laws, several of the States have provided for salary increases.

ACCIDENTS AND DISEASES. Progress was made in reporting these matters, Massachusetts making it compulsory for those engaged in the manufacture or sale of gas or electricity to inform the newly created Board of Gas and Electric Light Commissioners of deaths in those occupations; and New Jersey added to its existing provisions by requiring the report of vocational diseases in lead works and potteries. However, the most forward steps were taken in the matter of prevention. Like Massachusetts, New York and Virginia put forth attempts to protect laborers from fire; and comprehensive statutes regulating canneries and workshops were enacted in Maryland. These placed under the supervision of the State Board of Health the sanitation of creameries, bakeries, canneries, and other places where food products are manufactured. Virginia has decreed that several new sanitary and safety devices shall be introduced into manufacturing plants.

Noteworthy advance was made in New Jersey by most elaborate law for the protection of workers in compressed air, the second such law in any State in the Union. This required working and resting periods, and time for decompression. For the safety of workers in mines, three States have legislated, Kentucky rewriting her entire mine code. Accidents are to be prevented by detailed stipulations as to safety appliances, posting notices in the languages spoken by the miners, and several other regulations. Four States have provided for greater safety on railroads, South Carolina requiring warning boards, Louisiana stating that a period of training must precede operation of street cars, and Virginia making headlights and a caboose on freight trains required. By a popular vote in Missouri the full crew law was repealed, while in Mississippi a similar bill was passed.

WAGES AND HOURS. In nine States and Alaska, wages were legislated upon in 1914. Maryland and Massachusetts fixed the rates of pay of several classes of public employees, while New Jersey required that certain county workers be remunerated at regular intervals. Alaska and Kentucky granted first lien on mine property to those performing labor in connection with the mines; while Louisiana, Massachusetts, Mississippi, Ohio, and South Carolina enacted laws regulating the payment of wages in private industries. The question of granting two weeks' annual vacation with pay to laborers employed by cities and towns, and provision for Saturday half-holiday throughout the year for public employees, was approved by the voters of Massachusetts at the last election. Twenty-six States and the Federal government, and one territory —Alaska—now have an eight-hour day on public works. By a large majority, Buffalo, N. Y., in November, accepted the new charter which established the eight-hour day for the employees of that city. In the matter of limiting the hours of private employment, Alaska again led by adopting an eight-hour day in mines and smelters, while Porto Rico amended its law governing closing hours. Maryland and Massachusetts provided for two full days' rest each month for railroad employees; and the latter State, in addition, limited the working day for station laborers and baggage men. The ten-hour law of Mississippi for adult men in manufacturing and repairing was amended so as to exempt establishments dealing in perishable agricultural products. Also, New York amended her weekly rest-day law by excluding certain milk-handling establishments from its provisions, and by granting the commissioner of labor authority to exempt some continuous industries.

EUROPE. Among the important labor legislation passed during the year was a law in *Belgium* imposing regulations upon the employers of workers in compressed air caissons. This law, similar in many respects to the one in New Jersey, provided for safety devices and for means of insuring comfort to the workers, stipulated what the height of the room and the extent of pressure within it should be, and stated that the air in the chambers should be thoroughly purified after mines have been exploded therein, before the workers are readmitted. Time for decompression, and working and resting periods were also regulated. No one under 16 years of age, nor those found in a state of intoxication, nor those having no doctor's certificate are allowed to work in these caissons. In addition, there are rules for the foremen and workmen, and for their medical supervision. In *Germany*, a law was enacted late in 1913 relating to the employment of women and young people in brick works, which limited their labor to the lighter work involved. Also during the spring of 1914, provisions were made for the management of works in the iron industry, regulating the hours of labor and periods of rest. A most elaborate law was enacted in *Austria*, early in the year, with regard to the contracts of persons employed in the higher branches of the service of agriculture and forestry; this prescribed the employer's liability, the obligations of the employee, and the details as to dismissal or termination of employment.

LABOR LEGISLATION, AMERICAN ASSOCIATION FOR. This is the American branch of the International Association of like name. While established only a few years ago, it has succeeded in creating branches in a number of leading industrial States and has gained great prestige in the promotion of legislation for the betterment of working conditions. During 1914 it gave particular attention to the subjects of sickness, industrial injuries, and the problem of unemployment. It held a conference on occupational diseases in 1910, and on social insurance in 1913. At the same time it gave much publicity to European methods of insuring the working population against the evils consequent upon sickness. These steps were followed by the formation of a committee to investigate the possibilities of sickness insurance in the United States, and to draw up a proposed bill for legislative action. This committee was composed as follows: Henry R. Seager, Miles M. Dawson, Edward T. Devine, and Dr. I. M. Rubinow of New York; Charles R. Henderson of Chicago; Henry J. Harris of the Library of Congress; and Carroll W. Doten of Boston. This committee worked in coöperation with representatives of workers and employers, and expert legislative draftsmen were employed by it. For results of its deliberations, see SOCIAL INSURANCE.

The Association held the First National Conference on Unemployment in New York City, February 27–28; and the Second Conference at Philadelphia, December 28–29; and has coöperated with the American section of the International Association on Unemployment in an effort to alleviate this great evil of the industrial system. (See UNEMPLOYMENT.) In addition, the Association stands for the following: One day's rest in seven; protection from occupational diseases and industrial accidents; compensation for industrial diseases and accidents; additional safeguards for working women; and more efficient factory inspection and labor law enforcement.

LABRADOR. A peninsula in the northeastern part of British America, attached partly to Newfoundland (q.v.) and partly to Canada.

LABUAN. See STRAITS SETTLEMENTS.

LACROSSE. The Crescent Athletic Club of Brooklyn, N. Y., again in 1914 turned out the strongest lacrosse team in the United States. In their clashes with the Canadian players, however, the Crescents were not so successful as in the preceding year. The only important victory won in the series with the Dominion teams was that over Toronto University by a score of 11 to 2. The Canadian teams which defeated the Crescents, and the scores were: Toronto Lacrosse A. A., 6 to 3; St. Catherine's, Ontario, 5 to 4; Maitland Lacrosse Club of Canada, 8 to 5.

The victors in the United States Intercollegiate League were Cornell in the Northern division, and Lehigh in the Southern division. These teams battled to a tie in an effort to determine the supremacy. The standing follows: Northern Division—Cornell won 3, lost 0; Harvard won 2, lost 1; Hobart won 1, lost 2; Stevens won 0, lost 3. Southern Division—Lehigh won 2, lost 0; Johns Hopkins won 1, lost 1; Swarthmore won 0, lost 2.

LAFAYETTE COLLEGE. An institution for higher education, founded at Easton, Pa., in 1832. The total attendance in all departments in 1914 was 580, and there were 59 members of the faculty. No important gifts were received during the year, and there were no notable changes in the faculty except the election in December of John Henry MacCracken (q.v.) as president. The library contains about 44,000 volumes. The amount of productive funds in 1914 was $607,678, and the total income was $129,907.

LAKE CHAMPLAIN CENTENARY. See CELEBRATIONS.

LAKE MOHONK CONFERENCE OF INTERNATIONAL ARBITRATION. See INTERNATIONAL ARBITRATION AND PEACE.

LAKING, SIR FRANCIS HENRY. An English physician, died May 23, 1914. He was born in 1847 and received his medical education at St. George's Hospital. After holding junior appointments at this hospital, he entered into partnership with the Apothecary to the Royal Household, and so completely gained the confidence of Queen Victoria that on his principal's death he was appointed Surgeon Apothecary in Ordinary to the Queen, and also Apothecary to the Royal Household and the Households of the Prince of Wales and the Duke of Edinburgh. For a long period of years he was physician to various members of the royal family, and during the period of his official connection with the British court he enjoyed a warm personal friendship with his patients. He attended King Edward during his illness in 1902, and he signed the official intimation of the death of that sovereign. He received many decorations from foreign rulers and was a commander of the Legion of Honor.

LAMPS, ELECTRIC. See ELECTRIC LIGHTING.

LANDS, PUBLIC. Important measures relating to public lands were passed by the Sixty-third Congress. One of these was a new reclamation act, the purpose of which is to make it easier for the pioneer farmer on a reclamation project to bring his farm into full yielding. The time for the payment of the farmers' indebtedness to the government was extended from 10 to 20 years. Thus, by reducing the annual installments paid for water rights, the settler may be enabled to level his land, secure the necessary farm implements and cattle, and in general is given an opportunity to take from the land enough to pay for his water rights. There are other provisions in the act which make for the fuller use of the land, not the least important of which is one which should compel cultivation of private holdings and no longer permit their being held for speculation.

Another measure, which at the close of the year had passed the House, but had not been acted upon in the Senate, and which promises to be of even greater importance in the administration of public lands, is the power and general leasing bill. The bill relating to power provides for the granting of a 50-year lease of a government site or other needed government lands; at the end of that period the government may take over the power plant, paying for the right of way, water rights, and lands only their actual cost, and for all other property (excepting franchise or good will) its reasonable value.

The general leasing bill is called for chiefly by the existence of certain absurdities in the present laws, for example, making the placer law applicable to the entry of oil lands. As for coal, the bill permits a lease to be made of 2560 acres, but does not repeal the existing laws under which coal land may now be purchased from the government. The only other minerals covered by the bill are phosphates and potash. This measure makes available for the upbuilding of the West, through irrigation, whatever moneys may come out of its enactment. The reclamation fund in the first instance is to have these moneys and later such revenue is to be divided in equal portions between the States whence the resources come and the Federal government. The Secretary of the Interior estimates that if there had been such a law during the past ten years the government could have had for reclamation work not less than $50,000,000 as a 10 per cent royalty upon the oil produced from government lands.

GENERAL LAND OFFICE. This office in 1914 surveyed more than 17,000,000 acres of public lands at a cost of less than 4 cents an acre for field work. It also issued 73,999 patents covering 14,391,071 acres of land, as compared with 63,496 patents covering 12,678,076 acres in 1913. There were approved during the year over 4900 forest and reclamation homesteads and miscellaneous entries, as against 2800 in the preceding year. The office patented 10,000,635 acres under the homestead laws, or 2,680,577 acres more than in 1913. It patented 6,645,046 acres under the three-year homestead law, compared with 3,500,388 acres in 1913. There were restored 516,000 acres of land embraced in fraudulent or erroneous entries. Investigations and reports were made on more than 22,000 cases in the field.

During the year 19,602,859 acres of coal lands were classified and appraised. These lands are valued at $777,305,698. There were withdrawn 209,488 acres of oil lands, and restored 187,867 acres. Of phosphate lands there were withdrawn 169,885 acres, and restored 250,392. Of potash lands there were withdrawn 92,160 acres, and restored 320 acres. Power site reserves withdrawn in 1914 amounted to 183,612 acres, and there were restored 90,400.

LANDSCAPE GARDENING. See CITY PLANNING.

LANGLEY AËRODROME. See AËRONAUTICS.

LAOS. The largest of the territories composing the colony of French Indo-China (q.v.).

LASSEN PEAK. See VOLCANOES.

LAW, BONAR. See GREAT BRITAIN, *History*.

LAWN TENNIS. Maurice E. McLoughlin of California stamped himself the greatest lawn tennis player of his day during the season of 1914. But although the year saw an American crowned king of the sport, it also saw the Davis Cup, emblematic of the world's team championship, depart for Australasian shores. McLoughlin did his best to prevent such a catastrophe, but single handed he was unable to check the brilliant attack of Anthony F. Wilding and Norman E. Brookes which had carried them triumphant through the preliminary matches with the teams of Canada, Germany, and Great Britain.

The final round for the Davis trophy was fought on the courts of the West Side Tennis Club at Forest Hills, L. I., and was witnessed by 25,000 persons. In addition to McLoughlin, the American team comprised R. Norris Williams, 2d, in the singles, and Thomas C. Bundy as partner of McLoughlin in the doubles. The

Australasian representatives, aside from Brookes and Wilding, were A. W. Dunlop and S. N. Doust, but neither of the two last named was called into the fray.

Brookes met McLoughlin in the singles on the first day of the matches, and a struggle resulted that brought thrill after thrill to the thousands in the stands. It was veritably a battle between youth and age, between a comparative novice at the game and a man bearing the scars of experience received in scores of similar conflicts. Youth eventually came off victorious, but that first set, which went to 32 games, will never be forgotten by those lovers of tennis who were fortunate enough to watch the amazing display of endurance and skill.

The second match of the first day was between Wilding and Williams, Wilding winning in straight sets. On the following day the doubles were contested, the Australasians being easy victors. The score was two matches to one in favor of the challengers, when in the morning contest of the third day Williams again went down to defeat at the hands of Brookes. This victory gave the Australasians the cup. In the fifth match, which could have no bearing on the outcome, McLoughlin defeated Wilding by three sets to one.

A summary of the Davis Cup contests follows:

Preliminary Round at Folkestone, England. T. M. Mavrogordato, England, defeated P. de Borman, Belgium, 6-1, 6-3, 8-6; J. C. Parke, England, defeated A. G. Watson, Belgium, 6-2, 6-3, 6-3; H. R. Barrett and T. M. Mavrogordato, England, defeated W. H. Duvivier and A. G. Watson, Belgium, 6-1, 6-2, 6-2; T. M. Mavrogordato, England, defeated A. G. Watson, Belgium, 6-1, 6-0, 6-3; J. C. Parke, England, defeated P. de Borman, Belgium, 6-4, 6-3, 6-0.

Preliminary Round at Wimbledon, England. T. M. Mavrogordato, England, defeated Max Germot, France, 4-6, 7-5, 9-7, 6-2; J. C. Parke, England, defeated Max Decurgis, France, 6-2, 4-6, 3-6, 6-3, 6-3; Max Decurgis and Max Germot, France, defeated H. R. Barrett and T. M. Mavrogordato, England, 6-3, 5-7, 7-5, 6-4; T. M. Mavrogordato, England, defeated Max Decurgis, France, 6-1, 7-5, 7-5; J. C. Parke, England, defeated Max Germot, France, 7-5, 6-1, 6-3.

Preliminary Round at Lake Forest, Ill. N. E. Brookes, Australasia, defeated B. P. Schwengers, Canada, 6-2, 6-3, 6-2; A. F. Wilding, Australasia, defeated R. B. Powell, Canada, 6-1, 6-2, 6-2; N. E. Brookes and A. F. Wilding, Australasia, defeated B. P. Schwengers and R. B. Powell, Canada, 6-4, 6-3, 6-4; A. F. Wilding, Australasia, defeated B. P. Schwengers, Canada, 7-5, 6-3, 6-1; N. E. Brookes, Australasia, defeated R. B. Powell, Canada, 6-0, 6-1, 6-3.

Preliminary Round at Pittsburgh, Pa. A. F. Wilding, Australasia, defeated Oscar Kreutzer, Germany, 6-2, 6-2, 6-4; N. E. Brookes, Australasia, defeated Otto Froitzeim, Germany, 10-8, 6-1, 6-2; A. F. Wilding and N. E. Brookes, Australasia, defeated Oscar Kreutzer and Otto Froitzeim, Germany, 6-1, 6-2, 6-2; A. F. Wilding, Australasia, defeated Otto Froitzeim, Germany, 6-3, 6-4, 6-2; N. E. Brookes, Australasia, defeated Oscar Kreutzer, Germany, 6-4, 6-2, 8-6, 6-2.

Preliminary Round at Boston, Mass. A. F. Wilding, Australasia, defeated A. F. Lowe, England, 6-3, 6-1, 16-14; N. E. Brookes, Australasia, defeated J. C. Parke, England, 6-2, 4-6, 6-3, 1-6, 7-5; N. E. Brookes and A. F. Wilding, Australasia, defeated J. C. Parke and T. M. Mavrogordato, England, 6-1, 6-0, 6-4; Brookes defaulted to Lowe and Wilding to Parke, S. N. Doust and A. W. Dunlop being substituted as the Australasian team; J. C. Parke, England, defeated A. W. Dunlop, Australasia, 6-0, 7-5, 6-3; A. F. Lowe, England, defeated S. N. Doust, Australasia, 6-4, 6-4, Doust retiring at 7 all in the game because of the heat.

Final and Challenge Round at Forest Hills, L. I. A. F. Wilding, Australasia, defeated R. N. Williams, 2d, United States, 7-5, 6-2, 6-3; M. E. McLoughlin, United States, defeated N. E. Brookes, Australasia, 17-15, 6-3, 6-3; A. F. Wilding and N. E. Brookes, Australasia, defeated M. E. McLoughlin and T. C. Bundy, United States, 6-3, 8-6, 9-7; N. E. Brookes, Australasia, defeated R. N. Williams, 2d, United States, 6-1, 6-2, 8-10, 6-3; M. E. McLoughlin, United States, defeated A. F. Wilding, Australasia, 6-2, 6-3, 2-6, 6-2.

The United States national championships held on the Casino Courts at Newport, R. I., afforded a surprise in the defeat of McLoughlin by Williams for the singles title. Williams showed tremendous speed and captured the match in straight sets. McLoughlin and Bundy had little difficulty in retaining their doubles title, defeating G. M. Church and Dean Mathey of New York, 6-4, 6-2, 6-4.

Miss Mary K. Browne of California successfully defended the woman's singles title by her victory over Miss Marie Wagner of New York. Miss Browne and Mrs. R. H. Williams of Chicago for the second successive year captured the women's doubles title. Miss Browne and William T. Tilden repeated their success of 1913 by winning the mixed doubles honors. Clarence J. Griffin of California won the national clay court title.

A summary of the principal tournaments in the United States and Europe follows:

All-Comers National at Newport. Men's Singles, final round, R. N. Williams defeated M. E. McLoughlin, 6-3, 8-6, 10-8; Men's Doubles, final round, M. E. McLoughlin and T. C. Bundy defeated G. M. Church and Dean Mathey, 6-4, 6-2, 6-4.

Women's Singles, final round, played at St. Martin's, Pa. Miss Mary K. Browne defeated Miss Marie Wagner, 6-2, 1-6, 6-1; Women's Doubles, final round, Miss Mary K. Browne and Mrs. R. H. Williams defeated Mrs. Edward Raymond and Miss Edna Wildey, 8-6, 6-2.

National Indoor Championships, played in New York City. Men's Singles, final round, G. F. Touchard defeated Dr. William Rosenbaum, 6-2, 6-2, 4-6, 6-2; Men's Doubles, final round, W. C. Grant and G. C. Shafer defeated G. F. Touchard and W. P. Cragin, Jr., 3-6, 6-2, 6-2, 6-8, 6-1; Women's Singles, final round, Miss Marie Wagner defeated Mrs. C. N. Beard, 6-1, 2-6, 6-2; Women's Doubles, final round, Miss Clare Cassel and Mrs. S. F. Weaver defeated Mrs. W. McLean and Mrs. R. Schmitz, 4-6, 6-2, 6-4.

Clay Court Championships, played at Cincinnati, Ohio. Men's Singles, final round, C. J. Griffin defeated Elia Fottrell, 3-6, 6-8, 8-6, 6-0, 6-2; Men's Doubles, final round, N. Browne and C. Wayne defeated C. J. Griffin and Elia Fottrell, 6-3, 4-6, 6-3; Women's Singles, final round, Miss Mary K. Browne defeated Mrs. R. H. Williams, 6-1, 3-6, 6-2; Women's Doubles, final round, Miss Mary K. Browne and Mrs. R. H. Williams defeated Miss M. Lyons and Miss Dodd, 6-2, 6-1.

Metropolitan Championship, final round, played at Forest Hills, L. I. Men's Singles, R. L. Murray defeated F. B. Alexander, 6-8, 7-5, 7-5, 2-6, 6-4; Doubles, G. M. Church and Dean Mathey defeated G. C. Shafer and King Smith, 6-3, 7-9, 6-4, 12-10; Women's Singles, Mrs. Edward Raymond defeated Miss Clare Cassel, 6-3, 6-0; Women's Doubles, Miss Marie Wagner and Miss Clare Cassel defeated Mrs. S. F. Weaver and Mrs. Rawson Wood, 5-7, 7-5, 9-7.

Pacific Coast. Men's Singles, William M. Johnston defeated Elia Fottrell, 6-4, 6-0, 6-2; Men's Doubles, C. J. Griffin and W. M. Johnston defeated R. Roberts and Van Dyke Johns, 6-2, 6-2; Women's Singles, Mrs. H. A. Neimeyer defeated Miss Helen Baker, 6-3, 6-8, 6-2; Women's Doubles, Miss E. Tenant and Miss C. Tarlton defeated Mrs. H. A. Neimeyer and Miss Helen Baker, 8-6, 6-3.

Intercollegiate Championships played at Philadelphia. Singles, final round, G. M. Church, Princeton, defeated R. N. Williams, 2d, Harvard, 8-6, 9-7, 4-6, 7-5. Doubles—R. N. Williams, 2d, and Richard Harte, Harvard, defeated G. M. Church and A. M. Kidder, Princeton, 6-2, 6-2, 7-5. Western Conference Championships at Madison, Wis. Singles—A. M. Squair, University of Chicago, defeated J. Stellwagen, University of Minnesota, 6-1, 6-3, 2-6, 6-4. Doubles—Squair and McNeal, Chicago, defeated Buhai and Moses, Illinois, 6-1, 6-2.

English Championships at Wimbledon. Singles—N. E. Brookes, Australia, defeated A. F. Wilding, New Zealand, 6-4, 6-4, 7-5. Doubles—N. E. Brookes and A. F. Wilding, Australasia, defeated H. R. Barrett and C. P. Dixon, England, 6-1, 6-1, 5-7, 8-6. Women Singles—Mrs. R. Lambert Chambers defeated Mrs. Larcombe 7-5, 6-4. Women Doubles—Miss E. Ryan and Miss A. M. Morton defeated Mrs. Larcombe and Mrs. Hannam 6-1, 6-3.

International Tournament at Monte Carlo. Singles—A. Wilding, New Zealand, defeated Gordon Lowe, England, 6-2, 6-3, 6-2. Doubles—Poulin, France, and Kleinschroth, Germany, defeated A. F. Wilding, New Zealand, and Craig Biddle, United States, 2-6, 6-4, 2-6, 6-3, 6-4.

LAW SCHOOLS. See UNIVERSITIES AND COLLEGES.

LEAD. The production of primary lead from domestic ores in 1913 was 436,430 short tons, valued at $38,405,840, compared with 415,395 tons, valued at $37,385,550 in 1912. Though lead prices were maintained at a fairly high level for the first 10 months of the year, the total production from all sources fell off 18,000 tons from the total of 1912. This decline in the output was due to the shutting down of mines and smelters in Mexico on account of the unsettled conditions in that country. The lead of foreign origin smelted or refined in the United States in 1913 was less than half of similar lead refined in each of the three preceding years. Of the total lead produced in 1913, 462,460 tons were refined lead, 330,593 tons were desilverized lead, 131,867 tons were soft lead, and 16,665 tons were antimonial lead. Missouri ranks first in lead production, followed by Idaho, Utah, and Colorado. These are the chief lead-producing States. Details of the production in these and other States will be found in the articles on *Mineral Production* under the States.

The largest gain in domestic smelter production in 1913 was made by Utah, with 10,405 tons, or 17 per cent; Idaho followed closely with an increase of 10,022 tons; Colorado and California had gains of 5801 and 2483 tons, respectively; and Missouri's output suffered the greatest loss, 10,180 tons, or 6 per cent, notwithstanding which the State retained first place in production. Since 1910 Idaho has gained annually about 10,000 tons, and Missouri has lost about 30,000.

WORLD PRODUCTION. The production of lead in the principal producing countries in 1912–13 is shown in the following table.

PRODUCTION OF LEAD IN PRINCIPAL PRODUCING COUNTRIES IN 1912 AND 1913, IN SHORT TONS

Country	*1912*	*1913*
United States (domestic refined)	392,517	411,878
Spain	205,799	223,767
Germany	194,666	199,627
Australia	118,387	127,867
Mexico	132,276	68,343
Belgium	56,438	55,997
Great Britain	32,187	33,620
France	34,282	30,864
Other countries	115,961	118,495
Total	1,282,513	1,270,458

PRODUCTION IN 1914. According to the United States Geological Survey, the year 1914 was marked by an enormous increase in the output of domestic lead. This amounted to nearly 100,000 tons over the production of any preceding year. There was also a heavy decrease in the tonnage of lead of foreign origin treated in the United States, and for the first time in years there was a great increase in the quantity of domestic lead exported to European countries. At the same time the average price of lead in the United States was the lowest since 1898. The production of varieties of lead from domestic and foreign ores in 1914 was approximately 537,079 short tons, worth at the average New York price $41,892,162, compared with 462,460 short tons, valued at $40,696,480 in 1913. See CHEMISTRY; METALLURGY; OCCUPATIONAL DISEASES.

LEAD POISONING. See OCCUPATIONAL DISEASES.

LEATHER. The hide and leather industry during the year 1914 was complicated by the war and the outbreak of the foot and mouth disease. At the outbreak of the war the supply of hides appeared plentiful, and the shipments usually received at Antwerp and Hamburg, which normally are among the largest and most important dry hide markets of the world, were turned to London and New York. Nevertheless the actual amount of supply was relatively smaller and the slaughtering of cattle in South America was less than usual, due to financial conditions. As a result, at the end of the year, there was no surplus of hides, either in the United States or available for export to manufacturing centres, and the prices of packer hides advanced five cents a pound, when shoe manufacturing was at a low ebb. Russian hide dealers petitioned during the year the Minister of Commerce to export such hides as were not necessary for consumption, to the United States. In France the leather industry was stagnant, while in Belgium no business of any kind could

AVERAGE PRICES OF HIDES IN THE UNITED STATES

Packer Hides

Packer Hides		*Heavy Native Steers*	*Butts*	*Heavy Texas Steers*	*Light Texas Steers*	*Colorado Steers*	*Heavy Native Cows*	*Light Native Cows*	*Branded Cows*	*Native Bulls*	*Branded Bulls*	*Average Prices*
Average,	1914	19.76	18.56	19.28	18.77	18.2C	18.94	19.27	18.49	16.20	15.15	18.25
"	1913	18.38	17.42	18.06	17.72	17.26	17.28	17.27	17.19	14.82	18.80	16.920
"	1912	17.69	16.17	16.58	16.14	15.88	16.40	16.80	15.71	14.07	12.08	15.697
"	1911	14.81	18.50	14.82	18.54	13.47	18.87	13.50	12.56	12.11	10.50	13.218
"	1910	15.29	13.71	14.88	13.77	13.42	13.79	13.04	12.40	11.96	11.10	11.981

COUNTRY HIDES

Country Hides		*No. 1 Heavy Steers*	*Country Pkr. Brd. Flat*	*No. 1 Heavy Cows*	*Country Brd. Flat*	*No. 1 Buffs.*	*No. 1 Extremes*	*No. 2 Buffs.*	*Bulls Flat*	*No. 1 Calfskins*	*No. 1 Kips*	*Average Prices*
Average,	1914	16.56	16.84	16.42	14.58	16.68	17.70	15.64	18.98	21.90	19.26	16.89
"	1913	15.89	14.48	15.00	13.54	15.05	15.60	14.31	12.78	17.18	16.74	14.997
"	1912	14.25	13.12	14.06	12.38	14.05	14.91	13.02	11.22	18.60	16.01	14.157
"	1911	12.24	10.72	11.82	10.02	11.82	12.80	10.79	10.01	16.84	13.28	11.979
"	1910	12.16	10.20	11.26	9.49	11.18	11.51	10.02	9.86	16.02	12.08	11.878

LIVE STOCK SLAUGHTER AT PRINCIPAL POINTS FOR YEAR ENDING DECEMBER, 1914-13

	Cattle		*Calves*		*Sheep*		*Hogs*	
	1914	*1913*	*1914*	*1913*	*1914*	*1913*	*1914*	*1913*
Chicago	1,480,770	1,580,625	346,905	356,921	4,105,081	4,458,106	5,827,454	5,898,292
Kansas City	925,899	1,129,199	108,604	106,256	1,511,996	1,600,998	1,880,178	2,295,497
Omaha	525,898	512,040	....	....	1,875,092	1,598,028	1,927,954	2,161,771
St. Joseph	204,337	267,871	22,845	23,034	651,901	682,868	1,572,674	1,797,267
Cincinnati	159,204	159,151	50,870	50,941	122,781	111,285	551,824	518,144
Indianapolis	148,775	157,899	38,096	33,787	62,952	65,176	1,312,406	1,331,816
Sioux City	148,161	140,020	15,847	17,899	312,307	197,717	1,027,448	1,080,420
Oklahoma City	185,015	181,267	19,838	20,223	21,628	8,847	423,764	822,141
Wichita	78,075	83,212	....	....	18,099	17,051	411,906	465,279
Fort Worth	481,488	415,829	139,484	141,899	295,689	242,212	460,862	848,720
St. Louis	734,492	755,886	....	....	704,849	879,868	1,569,524	1,665,663
St. Paul	163,992	117,128	98,496	92,971	229,486	189,867	1,058,428	986,944
Totals	5,181,101	5,450,127	829,480	843,931	9,906,861	9,996,463	17,474,417	18,811,954
Increase	....	....	....	....	....	....	....	....
Decrease	269,026	....	14,451	....	89,602	....	1,337,537	....

St. Louis, Omaha, and Wichita count calves as cattle.

be carried on. In Germany supplies of leather required for military consumption were of course very large, and large demands from Turkey were also looked for, while German leather manufacturers hoped to make some exports to the neutral countries, although if contracts were carried at prices entered before the war, great losses would be occasioned.

Artificial leather continued during 1914 to be in active demand, having made itself a definite place, especially for the upholstering of automobiles, carriages, furniture, car seats, etc., taking the place of what was termed in the leather industry, splits. Artificial leather is not available as a substitute for shoe soles, belting or harness, or No. 1 grain leather, when used for upholstery, but as its basis is a very strong cloth, having twice the strength of the ordinary split, which is the weaker, fleshy side of the hide, it has a wide application. It has been estimated that by 1914 several hundred thousand automobiles had been upholstered in artificial leather and an independent demand for the product had arisen quite aside from its previous use as a substitute for the natural product. See BOOTS AND SHOES.

LEEWARD ISLANDS, THE. A British colony; the most northerly group of the Lesser Antilles. It is made up of five presidencies, detailed as follows:

	Sq. m.	*Pop.*	*Capital*
Antigua	170 1-2	32,265	St. John
Montserrat	32 1-2	12,196	Plymouth
St. Kitts & Nevis	150 1-3	43,303	Basseterre
Dominica	304 2-3	33,863	Roseau
Virgin Islands	58	5,562	Road Town
Total	716	126,318	St. John

The population is that returned by the census of 1911. With Antigua are included its dependencies, Barbuda and Redonda; with St. Kitts and Nevis, Anguilla. The islet of Sombrero was added to the colony by an order in council dated Aug. 10, 1904. St. John, the colonial capital, has 7910 inhabitants.

Except in Dominica, the system of elementary education is denominational; in Dominica, with a few exceptions, the schools are supported with public funds, as are also two schools in Antigua. There are also secondary, agricultural, and technical schools. Industrial and other statistics will be found in the articles on the separate presidencies. Total trade and finance statistics are given in the table below, revenue and expenditure being exclusive of government grant:

	1909-10	*1910-11*	*1911-12*	*1912-13*
Imports	£485,393	£567,817	£713,414	£640,729
Exports	441,728	558,165	566,754	563,339
Revenue	149,670	164,375	174,818	172,480
Expenditure	149,906	159,263	158,924	162,266

There are no railways and no internal telegraphs. There is cable connection with Guadeloupe, and thence with the United States, Bermuda, Canada, and Europe.

The Governor in 1914 was Sir H. Hesketh-Bell (appointed 1912); he is aided by executive and legislative councils.

LE FEVRE, Egbert. An American physician and educator, died March 30, 1914. He was born in Raritan, N. J., in 1858, and graduated from Rutgers College in 1880. He studied medicine at the University Medical College, New York University, receiving the degree of M.D. in 1883, and for the two years following he saw service in hospitals. From 1880 to 1890 he was clinical lecturer on the practice of medicine at New York University, adjunct professor of medicine in 1895, associate professor of therapeutics, and professor of clinical medicine in 1898. In that year he also became dean of the School of Medicine at New York University. He was consulting physician to several hospitals in New York City and was a member of several medical and scientific societies. He was the author of *Physical Diagnosis* (1902).

LEHIGH UNIVERSITY. An institution for higher education at South Bethlehem, Pa., founded in 1866. There were enrolled in all departments of the university in the autumn of 1914, 672 students, and the faculty numbered about 75. The Taylor Gymnasium was completed during 1914 and an additional playing field was provided. The plant of the university has also been improved by the erection of a commodious home for the Department of Arts and Sciences, which has been named Coppée Hall, as a memorial to Dr. Henry Coppée, the first president of the university. In connection with the regular extension work of the university an evening school has been organized in the plant of the Bethlehem Steel Company. The productive funds of the university amount to about $1,314,000, and the annual income to about $240,000. The library contains 133,200 volumes. The president is Henry Sturgis Brinker, E.M., LL.D.

LELAND STANFORD JUNIOR UNIVERSITY. An institution for higher learning, founded in 1891. The number of students enrolled in the several departments for the fall semester of 1914–15 was 1879, and the faculty numbered 229. The only notable change in the faculty during the year 1913–14 was the creation of the office of Chancellor, to which the first president of the university, Dr. David Starr Jordan, was transferred, Dr. John Casper Branner being chosen to succeed him as president. Dr. Flügel, who had been professor of English philology from the beginning of the university, died on November 14. Among the gifts received during the year was the benefaction of $30,000 from Thomas Welton Stanford of Melbourne, Australia, the first installment of a fund for the erection of a fine-arts museum; $10,000 to the Medical School by the will of Charles Gaylord Lathrop, late trustee and treasurer of the university; $10,000 from the estate of the late W. J. Dickey of Fresno, Cal., for the establishment of two undergraduate scholarships; $10,000 from Charlotte S. Playter, to establish the C. Annette Buckel fellowship in the study of retarded school children. At the end of the college year 1913–14 the endowment funds of the university amounted to $23,961,338, and the annual income to $1,461,315. The library contained 239,122 volumes on July 31, 1914.

LEMAÎTRE, (François Elie) Jules. A famous French critic and dramatist, died at Tavers (Loiret), Aug. 5, 1914. He was born at Vennecy (Loiret), April 27, 1853, graduated from the Ecole Normale Supérieure, Paris, in 1875, and soon afterward received an appointment as professor of rhetoric at the lycée of Havre. In 1880 he became lecturer at Algiers; joined the faculties of Besançon in 1882, and Grenoble in 1883; but in the following year gave up university work to devote himself to literary production. In 1880 appeared his first volume of verse, *Les médaillons;* in 1882 he obtained his doctorate in letters for an able thesis on *La comédie après Molière et le théâtre de Dancourt;* and in 1883 he published his second volume of verse, *Les petites orientales.* In 1885 Lemaître succeeded J. J. Weiss as critic on the *Journal des Débats,* and he contributed also to the *Temps, Figaro, Gaulois, Echo de Paris,* and *Revue des Deux Mondes.* The literary and dramatic criticisms which appeared in these journals and reviews were collected in two large series, *Les contemporains* (7 vols., 1885–99), and *Les impressions du théâtre* (10 vols., 1888–98). His appreciations of modern French writers are remarkably keen, and his style is worthy of the best traditions of France. Much the same may be said of his dramatic criticisms, which were made especially valuable by his own practical experience as a playwright. His plays, not lacking in many fine qualities, include: *Révoltée* (1889); *Député Leveau* (1891); *Mariage blanc* (1891); *Flipote* (1893); *Les rois* (1894); *L'age difficile* (1895); *Le pardon* (1895); *L'aînée* (1895); *La bonne Hélène* (1896); *La massière* (1904); *Princesse de Clèves* (1905); *Bertrade* (1905); *Le mariage de Télémaque,* with Maurice Donnay (1910). His stories include *Sérénus* (1886); *Dix contes* (1889); *Myrrha* (1894); *En marge des vieux livres* (3 vols., 1905, 1907, 1914). His later critical works included: *Opinions à répandre* (1902); *Théories et impressions* (1904); *J. J. Rousseau* (1907); *Racine* (1908); *Fénelon* (1910); *Chateaubriand* (1912). Lemaître succeeded Victor Duruy as a member of the French Academy in 1895, and in 1898, with François Coppée, he founded La Ligue de la Patrie Française.

LEPROSY. In April, 1913, a bill was introduced into the House of Representatives providing for a national leprosarium under the control of the Surgeon General of the United States. This bill was before Congress over a year, but there seemed small chance of its enactment into law. Dr. W. C. Rucker, Assistant Surgeon-General, United States Public Health Service, pointed out the necessity for the establishment of a national leprosarium. Segregation and cleanliness are the only effective weapons, he believes, against the spread of leprosy. There exists no positive means for diagnosis in the early stages; no specific treatment has yet been found. There was evidence that the disease was on the increase in the United States, where there are several well established foci. Leprosy was made notifiable in most States, but in only three of them were well established leprosariums, in which the per capita cost for maintenance and treatment is excessive. Another reason why such a national institution should be established exists in the inhuman treatment meted out to lepers in this country. Rucker says, "Let a man be marked as a leper and he becomes a pariah, an outcast from society, to be hounded from place to place, to be locked up in a lonely, often filthy, building, there to be viewed at a distance by the more intrepid as some wild and dangerous animal. The unwelcome visitor disturbs trade, and he is hurried by night over the State line, there to be subjected to further indignities and to become a thorn in the side of another community, by reason of the economic losses which his presence produces. Verily the lot of the leper in this Christian country of ours is sad and troubled." Since 1894 the Louisiana Leper Home has cared for a considerable number of patients; in 1914 there were nearly 100 inmates. Texas was believed to have 30 cases or more. California about the same number. In New York the number was estimated at more than 100.

The prevalence of leprosy in Norway is shown by a table in *Public Health Reports* for May 29, 1914. It appears that from 1906 to 1910 there were 211 deaths from leprosy. Of these 128 were males and 83 females. At the end of 1910 there were 323 lepers, 137 males, and 186 females. The latest treatment for leprosy advocated, was that by the injection of iodoform. The iodoform is dissolved in liquid paraffin and ether, the skin of the patient's arm is cleaned with an antiseptic solution, a tourniquet is applied above the elbow and the iodoform mixture injected into the median basilic or median cephalic vein. The solution may also be injected into the substance of nodules. Here it has the effect of destroying the nodules and leaving a clean granulating surface free from the lepra bacilli. Courtney, who used the method in 12 cases, reports good results except in the anæsthetic cases, which did not respond.

LESLIE, Mrs. Frank (Baroness de Bazus). An American publisher, died Sept. 18, 1914. She was born in New Orleans, La., in 1828. Her maiden name was Miriam Florence Folline, and she was a descendant of a noble French Huguenot family from which she took the title of Baroness de Bazus late in life. In 1880, upon the death of her husband, Frank Leslie, the publisher, she took charge of his then badly involved business, and soon brought it to a flourishing condition. Under her management the *Popular Monthly*, which she later sold, increased 200,000 copies in four months. While making an extensive European tour she met William Wilde, a brother of Oscar Wilde, to whom she was married in 1891 and from whom she was divorced in 1893. She is also supposed to have been married once or twice before she met Frank Leslie. By her will Mrs. Carrie Chapman Catt was made residuary legatee of a fortune estimated at $1,500,000, this fortune to be spent by Mrs. Catt to advance the cause of woman suffrage. The bequest was popularly reported as a "million dollar gift to suffrage," but inasmuch as the will was contested by relatives the gift to "the cause" may prove to be much smaller.

LEWIS, Alfred Henry. American writer, died Dec. 23, 1914. He was born in Cleveland, Ohio, in 1858, and received an academic and high school training, after which he studied law, being admitted to the bar and successful in practice. At the age of 23 years he was elected prosecuting attorney for the city of Cleveland, and he continued the practice of law in Cleveland until the late '80s, when he and his brother opened a law office in Kansas City, Mo. Previous to his school days Mr. Lewis had spent some years in the southwestern part of the United States. He continued his studies of the West in Kansas City, and soon began to write stories which were studies of western character. These stories, known as the "Wolfville" stories, were so successful that Mr. Lewis gave up law and began his literary career. Going to Washington as political correspondent for several papers, his work became widely known and he was finally placed in charge of the Washington bureau of the New York *Journal*. He removed to New York in 1898 and founded a weekly publication called *The Verdict*, which for some time he edited. Although in his later years he did much newspaper work, it was as a writer of books, short fiction, and magazine articles that he was chiefly known. He contributed to magazines several series of articles of a political nature, which were extremely frank and radical in the treatment of men and measures. His published writings include: *Episodes of Cowboy Life; Sandburrs; Wolfville Days; Wolfville Nights; Black Lion Inn; Peggy O'Neal; Wolfville Folks; Confessions of a Detective; An American Patrician—Aaron Burr;* and *Faro Nell and Her Friends.*

LIBERIA. An independent negro republic on the West African coast, covering an area variously estimated at from 35,000 to 41,000 square miles. Out of a population estimated to number between 1,000,000 and 2,000,000, about 12,000 are Americo-Liberians. The country is almost totally undeveloped. Roads are few and railroads unknown. Trade is mostly with Hamburg, the United Kingdom, Netherlands, and the United States. The imports for 1912 were reported at $1,667,857, against $1,154,924 in 1911; exports, $1,199,152, against $1,013,849 in 1911. The revenue for 1912–13 amounted to $618,809, and the expenditure to $529,548; 1913–14 budget, $531,500. The debt stood Dec. 31, 1913, at $1,352,000. The internal floating debt amounted to $200,000. Monrovia is the capital. President in 1914, Daniel Edward Howard. He assumed office in January, 1912, for four years.

Army. While the military forces of Liberia could hardly be termed an army, yet there is an enlisted frontier force of about 600 men with native officers, who have received training at the hands of officers from the United States army.

History. In June, John L. Morris, the Liberian Secretary of the Treasury, and Ernest Lyon, the Liberian counsul-general at Baltimore, complained to President Wilson of the United States that Reed Paige Clark, who had been appointed receiver of customs in connection with the Kuhn, Loeb & Co. loan of $1,700,000 in 1912, was arrogating to himself almost dictatorial powers and playing the petty tyrant in the negro State. In December the French *Annales Coloniales* alleged that the Liberians were sending "armed bands which make incessant bloody incursions into the territory of French Guinea and the Ivory Coast"; that Liberia gave shelter to hostile ships; and that reasons existed for supposing a German wireless station to be operating on Liberian soil.

LIBRARY ASSOCIATION, American. A

society organized in 1876 and incorporated in 1879 to develop the public library in its bearing on American education and by coöperation to increase the efficiency of library administration. The present membership is about 3300. Annual meetings are held, the 36th being in Washington, D. C., May 25–29, 1914, at which there was an attendance of 1366, of whom 300 were from libraries in the District of Columbia. E. H. Anderson, director of the New York Public Library, took for the subject of his presidential address, "The Tax on Ideas," and emphasized the fact that Russia and the United States are the only powers of the first class which impose a duty on books published beyond their borders. Some of the other principal papers were the following: "The Need of a National Archive Building," J. Franklin Jameson; "The Library and the Immigrant," John Foster Carr; "Libraries for Rural Communities," P. P. Claxton, United States Commissioner of Education; "The Present Trend," Charles Knowles Bolton; "Prestige," W. N. C. Carlton; "How the Library of Congress Serves the People of the Several States," W. W. Bishop; and "The County Agent in Relation to Rural Library Work," D. W. Working, of the Department of Agriculture. The official council passed resolutions relative to library service in schools and qualifications of school librarians, emphasizing that good service from school libraries is indispensable in modern educational work, and that this work should be directed by one who is equally competent in scholarship, talent, and teaching power with the head of any other department of instruction in the same school.

Committees the past year have studied, among other things: uniformity in library statistics, with a view to having each public library of the country report on certain matters of common interest from a uniformly common basis; the establishment of a general clearing house for information on library labor saving devices; library work in penal and charitable institutions; and the preparation of a year book of general library information and statistics. An exhibit of the principal features of American library economy was sent to the International Exposition of the Book and Graphic Arts in Leipzig, and the association has prepared a similar exhibit for the Panama-Pacific International Exposition at San Francisco.

Executive offices, in charge of a salaried secretary, are maintained in Chicago in the public library building. This is the centre for the association's activities which may be roughly grouped as follows: (a) Editing and publishing the official bulletin, issued bimonthly, through which the membership is kept informed of the plans and work of the association and its committees. One number is entirely devoted to the proceedings of the annual meeting and another to the *Handbook*, containing lists of officers, committees, members, etc. (b) Editing and publishing the *A. L. A. Booklist*, a monthly guide to the selection and purchase of the best of the current books. This work is conducted by an editor (Miss May Massee), and a corps of assistants, who devote their entire time to this periodical. (c) Publishing and sale of all publications of the association. (d) Correspondence on all phases of library work, the executive office acting, so far as it is able, as a clearing house of library information. During the year about 21,000 letters have been mailed from the office, in addition to about 20,000 pieces of circular matter, and the publications which have been sold. (e) Coöperation with the association committees, library commissions, State library associations and library clubs, and other national, educational, and civic associations. (f) Promoting better library architecture by collecting and loaning plans of library buildings. (g) Promoting general publicity of the aims and activities of the association and library work at large.

Affiliated with the American Library Association are four national associations of kindred purpose: National Association of State Libraries, League of Library Commissions, American Association of Law Libraries, and Special Libraries Association. The National Education Association has a library section closely connected, though not officially affiliated, with the American Library Association.

Among the important publications of the year are a supplement (1900–10) to the *A. L. A. Index to General Literature*, an index to kindergarten songs, a list of books for boys and girls, an enlarged and revised edition of its *Cataloging for Small Libraries*, and five chapters in the *Manual of Library Economy*, making 25 chapters thus far printed out of the 32 projected. The publishing activities operate under a gift to the association of $100,000 made in 1902 by Andrew Carnegie. There are about 80 publications now in print. The officers for the year 1914–15 are as follows: President, H. C. Wellman, City Library, Springfield, Mass.; first vice-president, W. N. C. Carlton, Newberry Library, Chicago, Ill.; second vice-president, Mary L. Titcomb, Washington County Free Library, Hagerstown, Md.; secretary George B. Utley, 78 E. Washington Street, Chicago; treasurer, Carl B. Roden, Public Library, Chicago, Ill.

The 37th meeting will be held at Berkeley, Cal., June 3 to 9, 1915. See LIBRARY PROGRESS.

LIBRARY BUILDINGS. See ARCHITECTURE; LIBRARY PROGRESS.

LIBRARY OF CONGRESS. The total number of books in the library at the close of the fiscal year 1914, was 2,253,309, an increase of 125,054 during the year. There were in addition 141,712 maps and charts, 663,474 volumes and pieces of music, and 376,812 prints. Of the accessions, 20,534 were by purchase, 14,753 by gift, 35,331 by transfer from United States Government libraries, 15,815 by copyright, and 23,959 by the Smithsonian Institution. Others were gifts from State governments, local governments, foreign governments, exchange, etc.

The most important single accession during the year was the gift of Mr. Jacob F. Schiff, consisting of more than 4200 volumes to reënforce the collection of Semitica given by him to the library in 1912. The present collection, like the former, was brought together by Dr. Ephraim Deinard, who spent the preceding year in Europe and Palestine in gathering material. With a few exceptions the collection consists of Hebraica, in all branches of literature from the earliest antiquity to modern times, including several notable bibles. Another valuable gift was a collection of 265 volumes from Miss Martha C. Codman, which included much valuable material relating to early colonial history and literature. The principal purchase of the year was a group of Chinese and Manchu books selected in Peking by Dr. Hing Kwai Fung. This includes 6467 volumes, embracing works dealing chiefly with lexicography, history, and physiography, the arts, agriculture, medicine, bibliography, and epigraphy.

The editing of the journals of the Continental Congress progressed during the year. The volumes for 1782 were printed and the copy for 1783 was in the hands of the printer. Since this publication was begun in 1904, it has gone forward at the rate of the annual publication of the journal for one year, with one exception. About seven years will be required to complete the publication at this rate of progress. A large number of valuable manuscripts relating to early colonial history and personages was added during the year.

LIBRARY PROGRESS. The year 1914 in American libraries was marked by steady growth along lines already familiar rather than by any unusual movements. The chief event of professional interest was the great exhibit in Leipzig of the Book and Graphic Arts to which the libraries of America made a gratifying contribution. The Library of Congress and the American Library Association combined in a joint exhibit which set forth graphically and in very practical fashion certain of the distinctively American features of library practice. This great exposition was rudely interrupted by the outbreak of the war, but the exhibits have been returned in safety to the United States.

The annual meeting of the American Library Association was held in Washington in May. The attendance was the largest ever recorded (1366). The *Proceedings* have been issued from the offices of the Association, 78 East Washington Street, Chicago, and contain the reports of papers read at the various meetings of sections and affiliated organizations. A new section for high school librarians met for the first time. The Bibliographical Society of America, League of Library Commissions, Association of Law Libraries, Special Libraries Association, and other bodies met in Washington with the Library Association.

LIBRARY LEGISLATION. There was much less legislation on library matters than in 1913, as but 14 State legislatures were in session. New York not only restored certain appropriations for State work in aid of libraries to their former figures, but in addition threw open school libraries for public circulation in school districts in which there is no public library, thus providing legal machinery for the creation of a free circulating library in every school district in the State. In New Jersey school libraries as a result of new enactments are to be brought directly under the supervision of the Public Library Commission, and law libraries are provided for in counties having from 20,000 to 50,000 inhabitants. Massachusetts passed an act enabling towns adjacent to cities containing public libraries to contract with such public libraries to permit the inhabitants of their towns to draw books. This method of coöperation between country and city is becoming one of the marked features of modern library practice. The benefits of the city public library are shared by the surrounding rural districts in return for a modest contribution to the support of the library. Massachusetts also materially increased the appropriations for the work of its Library Commission.

LIBRARY LITERATURE. Antrim, S. B. and E. I., *The County Library* (Van Wert, Ohio, 1914), chiefly devoted to a history of the Brumback Library of Van Wert; Bishop, Wm. W., *Practical Handbook of Modern Library Cataloging* (Baltimore, 1914); Severance, Henry O., *Guide to the Current Periodicals and Serials of the United States and Canada* (Ann Arbor, 1914), a third edition of an invaluable tool; Kaiser, John B., *Law, Legislative, and Municipal Reference Libraries* (Boston, 1914); Chipman, Charles Phillips, *Books and Libraries* (Waterville, Me., 1914); Brown, James Duff, *Subject Classification*, 2d ed. (London, 1914); Richardson, Ernest C., *The Beginnings of Libraries and Biblical Libraries* (Princeton, N. J., 1914); the latter bringing library history down to about 150 A.D.; *Catalogue of Books Relating to Architecture . . . in the Boston Public Library* (Boston, 1913); *Books for High Schools*, compiled by Martha Wilson (Chicago, American Library Association Pub. Board, 1914); Library of Congress—*Catalogue of opera librettos printed before 1800*, 2 vols.; *List of geographical atlases*, vol. iii; *Handbook of the libraries of the District of Columbia; American doctoral dissertations printed in 1912;* several select lists of books on topics of current interest; *A. L. A. Index to general literature, supplement* 1900–1910 (Chicago, 1914).

LIBRARY TRAINING SCHOOLS. The school in connection with Drexel Institute in Philadelphia was closed after many years of honorable service in training librarians. No new schools were established, but the Brooklyn Public Library introduced a course of training for children's librarians, and the New York Public Library School one for training persons for work in municipal reference libraries.

LIBRARY TRAINING SCHOOLS. See LIBRARY PROGRESS, under heading so entitled.

LIBYA. A French possession on the Mediterranean coast of Africa, comprising Tripoli and Cyrenaica. See TRIPOLI.

LIÉGE, ASSAULT AND CAPTURE OF. See WAR OF THE NATIONS.

LIFE INSURANCE. See INSURANCE.

LIGHT. See ELECTRIC LIGHTING and PHOTOGRAPHY.

LIGHTHOUSES. During the year there was little in the way of new lighthouse construction, either in Europe or America, which involved striking departures from existing methods of work, or unusual dimensions. The number of aids to navigation maintained by the United States Lighthouse Service on June 30, 1914, is shown by the accompanying table:

Lighted aids:	
Lights (other than minor lights)	1,588
Minor lights	2,798
Light-vessel stations	52
Gas buoys	458
Float lights	118
Total	5,004
Unlighted aids:	
Fog signals	519
Submarine signals	48
Whistling buoys, unlighted	86
Bell buoys, unlighted	288
Other buoys	6,330
Day beacons	1,978
Total	9,104
Grand total	14,198

LIND, JOHN. See MEXICO, *History.*

LINDSAY, THOMAS M. A Scottish clergyman and educator, died Dec. 7, 1914. He was born in 1843 and received his education at Edinburgh University. In 1872 he was appointed to the chair of Church History at the College of the Free Church, in Glasgow, and for fifteen years was Convener of the Foreign Mission Committee of the Free Church of Scotland. In 1902 he was appointed principal of the United Free Church College, in Glasgow. He wrote much on matters connected with church history and other subjects; his published writings including Handbooks on Reformation, on Acts, Mark, Luke; Life of Luther; Cunningham Lectures on the Church and the Ministry in the Early Centuries. He also contributed to the *Cambridge Modern History, Cambridge Mediæval History,* and the *Cambridge History of English Literature.*

LIQUOR REGULATION. Although comparatively few of the State legislatures were in session in 1914, and thus the laws designed to regulate the liquor traffic were fewer than in 1913, there was no halt in the progress of prohibition in the States. In the South the movement continued and three States, Tennessee, Virginia, and West Virginia, either by legislative enactment or by votes of the people, are or will be prohibition States. In the elections of November 3, Arizona, Colorado, Oregon, and Washington voted for prohibition, and while the movement was defeated in California and Ohio, the vote showed a strong sentiment in favor of it in these States. The addition of the States noted brings about one-fifth of the population of the country under State-wide prohibition, or more than one-half if local option areas are included. Thirteen States were under prohibition at the end of the year, five of these voting "dry" during 1914. In Kentucky a measure providing for State-wide prohibition was passed in the House but defeated in the Senate. For further details in regard to prohibition enactments and measures in these States, see the historical sections under them.

The Federal measure for the submission to the States of a constitutional amendment providing for prohibition in the United States did not receive the necessary two-thirds vote. (See LIQUORS.) In general the opponents of the measure based their objection to the amendment on the ground that the matter was a question for State and not Federal regulation. This, it is understood, was the attitude taken by President Wilson and Secretary Bryan. The Prohibition party made notable gains in November in Arizona, California, Massachusetts, Minnesota, New York, and Oregon. The Prohibition candidate for Congress who combined with the Democrats in California was elected, and it was in this State that the Prohibition gain was greatest. Prohibition vote increased over 15,000.

LIQUORS. During 1914 the thing which had the greatest effect upon the liquor industry in the United States was the prohibition agitation. The following States voted prohibition during the year: Arizona, Colorado, Oregon, Washington, and Virginia. The greatest fight occurred, perhaps, in the States of California and Ohio, one being a great wine centre and the other a great whisky centre. In both of these States the prohibition amendment was defeated. On Dec. 22, 1914, the House of Representatives of the United States voted on the prohibition amendment to the Constitution. The amendment received a majority vote but failed to obtain the necessary two-thirds.

WINES. The following table shows the production of wines for the year 1912 as given in the *Moniteur Vinicole:*

Countries	*Gallons*	*Countries*	*Gallons*
France	1,568,751,645	Roumania	23,775,300
Italy	1,195,612,286	Servia	11,887,650
Spain	375,121,400	Brazil	11,887,650
Algeria	176,282,588	Tunis	6,604,250
Argentina	108,309,700	Uruguay	5,547,570
Russia	100,384,600	Australia	5,283,400
Portugal	95,761,625	Peru	5,283,400
Hungary	70,588,390	Cape of Good Hope	3,962,550
Austria	66,042,500	Corsica	2,568,683
Chile	66,042,500	Bolivia	2,113,360
Germany	68,400,800	Luxemburg	1,188,765
Greece and Islands	55,475,700	Canada	1,056,680
U. S.	42,287,200	Azores, Canaries, and Madeira	1,003,846
Bulgaria	31,700,400	Persia	79,251
Turkey and Cyprus	26,417,000	Mexico	528,340
Switzerland	23,854,551	Egypt	39,625

The above table is probably only an estimate of the production of the various countries, but is very interesting in showing their relative importance in the production of wine. A glance at the tabulation shows what a small part California plays in the world's production (producing 90 per cent of American wines). Although that great State has the same climate, soil, and sun as Italy, and is one-third larger, yet it produces only one-thirtieth as much wine.

No accurate figures for the California product in 1914 are at present available; estimates are approximately 39,000,000 gallons, of which about 23,000,000 gallons are dry wines. The quality is expected to be decidedly better than the vintage of 1913. Reports from France vary; in some departments the yield will only be from 50 to 70 per cent of a normal crop. A rough estimate calculates the total yield from France and Algeria together as approximately 2,000,000,000 gallons. The effect of the war is at present uncertain; probably the districts in Northern France around Rheims, and the Moselle and Rhine have suffered considerably. The worst effect undoubtedly will be felt in 1915, as the labor for handling the crops will not be available as in the past.

The United States emergency war revenue act, passed in the fall of 1914, placed a tax of 8 cents a gallon on wines not fortified, and 55 cents a proof gallon on brandy used in the fortification of sweet wines, as against no tax on dry wines, and 3 cents a gallon on brandy used in fortification in the past. While this tax is only for one year it is expected that it will be continued.

FERMENTED LIQUORS. The following table, credited to *Gambrinus,* published in Vienna, showing gallons of beer produced, and the number of breweries in the various countries, is of interest:

Country	*Gallons*	*Breweries*
United States	1,686,476,000	1,446
Germany	1,484,296,000	10,967
United Kingdom	1,334,652,000	3,846
Austria-Hungary	543,994,000	1,159
Belgium	359,700,000	3,214
France	353,452,000	3,210
Russia	247,280,000	940
Switzerland	75,020,000	97
Sweden	62,348,000	190
Denmark	45,408,000	336
Holland	42,460,000	444

Fiscal year	*Number of denaturing warehouses*	*Completely denatured Wine gallons*	*Specially denatured Wine gallons*	*Total Wine gallons*	*Total Proof gallons*
1907	8	1,397,861.16	382,415.19	1,780,276.35	3,084,950.3
1908	12	1,812,122.38	1,509,329.35	3,321,451.73	5,640,331.2
1909	12	2,370,839.70	2,185,579.15	4,556,418.85	7,967,736.4
1910	12	3,076,924.55	3,002,102.55	6,079,027.10	10,605,870.7
1911	14	3,374,019.92	3,507,109.94	6,881,129.86	11,682,887.9
1912	14	4,161,268.56	3,933,246.44	8,094,515.00	13,955,903.8
1913	21	5,223,240.78	4,608,417.76	9,831,658.54	16,958,552.8
1914	25	5,213,129.56	5,191,846.03	10,404,975.59	17,811,078.2

Denatured Alcohol. The preceding statement shows, for the United States, the quantity of such spirits denatured during each of the fiscal years since the enactment of the denatured alcohol law of June 7, 1906.

The emergency war revenue act of 1914 did not increase the rate of tax on distilled spirits.

Cordials and Other Compounds. No data are available as to the amount produced. The United States emergency war revenue act of 1914 placed a tax of 24 cents a gallon on such preparations.

The following table shows the production of fermented liquors per capita consumption, etc., in the United States:

Year ends June 30	*Bbls. beer*	*Per capita gallons*	*Number of breweries*	*Retail dealers*
1912	62,176,694	19.96	1,506	17,258
1913	65,324,876	20.62	1,462	16,828
1914	66,189,473	20.50	1,392	15,760

This statement shows that the production is increasing instead of decreasing, but the number of breweries and retail establishments is decreasing; or, in other words, a larger volume of business is being done by a smaller number of establishments.

The 1914 emergency war revenue act increased the tax on beer to $1.50 per barrel.

Distilled Spirits. The amount of distilled spirits produced and consumed in the United States in the past three years is as follows:

Year ends June 30	*Produced proof gallons*	*Consumed proof gallons*	*Per capita consumption*
1912	187,571,808	133,259,148	1.44
1913	193,606,258	140,289,425	1.50
1914	181,919,542	136,269,752	1.38

The consumption fluctuates from year to year, but a comparison for the last 10 years shows that it is steadily increasing in the United States. The following amounts of spirits were bottled in bond during last five years:

Year ends June 30	*Proof gallons*
1910	8,985,759
1911	10,631,091
1912	9,752,486
1913	10,626,638
1914	10,441,588

Illicit distilling is increasing, in the opinion of the Internal Revenue officers, due largely to the prohibition laws.

The following table shows in millions of gallons (imperial) the consumption of wines, beer, and spirits in the principal countries for which statistics are at present available. (For other countries and earlier dates see previous volumes of the Year Book.)

	Year	*Great Britain*	*Germany*	*France*
Wines	1910	12.6	43.8	752.6
	1911	11.2	90.3	1156.1
	1912	11.2	69.1	1464.8
	1913	11.3	....	......
Beer	1910	32.8 (*a*)	1410.9	337.3
	1911	34.2	1539.7	395.3
	1912	33.9	1484.7	345.5
	1913	34.9	......	.....
Spirits (pure alcohol)	1910	24.0 (*b*)	39.2	30.8
	1911	25.2	43.3	34.6
	1912	25.1	42.5	33.3
	1913	26.1	.....	.....

(*a*) barrels.
(*b*) potable.

LITERATURE. See French Literature; German Literature; Italian Literature; Literature, English and American; Scandinavian Literature; and Spanish Literature.

LITERATURE, English and American. The great war of 1914 did not affect the number of books published as unfavorably as might have been expected. Most of the contracts for the fall book trade were under way when war was declared. The output did not differ markedly from that of the previous year. But in the sales of books after the opening of the war, fiction fell off very considerably, and works bearing directly upon the conflict were in great demand. Poetry and drama were less affected, so that in the month of October the number of volumes of poems and plays doubled that of novels. Characteristic tendencies seem to be indicated by the continued increase in the number of new books devoted to religion, theology, and philosophy, and the decrease in those dealing with science, pure and applied. The *Publishers' Weekly* reports the year's output as follows:

ENGLISH AND AMERICAN BOOK PRODUCTION, INTERNATIONAL CLASSIFICATION.

	England		*United States*	
	1913	*1914*	*1913*	*1914*
Philosophy	280	179	324	408
Religion, theology	889	969	944	1,082
Sociology	921	699	977	1,038
Law	319	279	692	507
Education	307	315	324	268
Philology	197	185	335	330
Science	732	840	790	677
Technology	699	687	781	669
Medicine, hygiene	478	454	600	542
Agriculture	248	198	490	371
Domestic economy	97	88	145	185
Business	230	155	221	229
Fine arts	254	204	264	310
Music	78	55	111	112
Sports and amusements	174	149	194	194
General literature	448	480	733	732
Poetry, drama	697	642	679	902
Fiction	2,504	2,112	1,156	1,053
Juvenile publications	668	631	622	683
History	523	454	538	581
Geography, description, and travel	798	618	558	542
Biography	548	442	681	604
Encyclopedias, bibliographies, and miscellaneous	305	702	152	141
Total	12,379	11,537	12,230	12,010

War Literature. The coming of the Great War in August, besides checking somewhat the demand for books unrelated to the all-absorbing topic of the hour, had a positive influence as well in stimulating the production and enhancing the sale of works aiming to throw light upon the European situation. In four directions this new impetus has been particularly fruitful; in studies of the diplomatic crisis which led up to the conflict; in controversial or apologetic works, chiefly written to sway public opinion in the neutral countries; in reprints or translations of books dealing with contemporary world politics and especially with the tone and temper of the modern German Empire; and, finally, in technical studies of the conditions and methods of twentieth century warfare. Studies of the conduct of the present war, either from the historian's standpoint or the journalist's, have as yet been few, partly because of the brief time which has elapsed since it began, but perhaps even more because of the careful censorship of news and the systematic suppression of the activities of the war correspondent which has marked the policy of all the nations involved.

The completest survey of the military situation during the opening months of war is given in *The Times' History of the War*, the first volume of which has now been published by the London *Times*, but *The War in Europe*, by Albert Bushnell Hart, the American historian, and *The Great War*, by Frank H. Simonds, are models of how history should be written while it is yet in the making. Other historical sketches include volume i of *The History of the Great European War*, by W. S. M. Knight; books on special phases and aspects of the war, such as *The Siege of Liége*, by Paul Hamelius; *From the Trenches*, by G. W. Young; *First from the Front*, by Harold Ashton; *Fighting in Flanders*, by E. A. Powell; *The World War*, by Elbert Francis Baldwin; *With the Allies*, by Richard Harding Davis; *In the Firing Line*, by A. St. John Adcock; *Tommy Atkins at War, As Told in His Own Letters*, by J. A. Kilpatrick; *Paris War Days*, by Charles Quinan Barnard. The eagerness with which the general public has studied the causes of the war is one of the most remarkable features of its reaction upon literature. The official documents published by the German, British, French, Russian, and Belgian governments have had a sale both as newspaper supplements and as pamphlets which places them among the "best sellers." Among the books dealing primarily with the causes of strife may be noted *The Diplomatic History of the War*, edited by M. P. Price; *The Clash of Nations*, by Rossiter Johnson; *Causes and Consequences of the War of 1914*, by Howard P. Okie; *The New Map of Europe*, by Herbert Adams Gibbons; *The Nations of Europe*, by Charles Morris; *The World War*, by E. F. Baldwin; *The Evidence in the Case*, by James M. Beck. The most widely noted pro-German books include *The Truth about Germany; What Germany Wants*, by Edmund von Mach; *The War and America*, by Professor Hugo Münsterberg. The cause of the Allies has been urged by Arnold Bennett in *Liberty;* by H. G. Wells in *The War that Will End War;* by Cloudesley Brereton in *Who Is Responsible?;* by Douglas Sladen in *The Real "Truth about Germany";* and in the *Oxford Pamphlets, 1914*, by many noted writers.

Books expounding the philosophy of Pan-Germanism, whether from a friendly or a hostile standpoint, have been enormously in demand. An example of this is Roland G. Usher's *Pan-Germanism*, which was little noticed at the time it first appeared, early in the year, but became with the war, the most widely read book (other than fiction), in America. Professor Treitschke, who has been little more than a name to those who have not mastered the German language, appears this year in *Selections from Treitschke's Lectures on Politics*, by A. L. Gowans; in *Treitschke*, by Adolf Hausrath; in *The Political Thought of Heinrich von Treitschke*, by H. W. C. Davis. The doctrines of militarism appear in a more popular and less original form in the books of Gen. Friedrich von Bernhardi, a disciple of Treitschke, whose *Germany and the Next War* has been widely read and quoted, and whose later book, *Our Future*, has also been translated. Prince von Bülow's *Imperial Germany* was translated before the outbreak of the war, but even at the time it was published it attracted no little attention because of the importance of the author in determining German policy and because of the charm and candor of his style. Another book to which the war has given importance is the late Professor J. A. Cramb's *Germany and England*, delivered as a series of lectures in 1913, urging England to put herself in readiness for the inevitable conflict with the German Empire. The German Emperor is a favorite topic for students of world politics, and we have many sketches of his personality: *Germany and the German Emperor*, by Herbert Perris; *William of Germany*, by Stanley Shaw; *The German Emperor and the Peace of the World*, by A. H. Fried; *The Real Kaiser; The Kaiser*, edited by Asa D. Dickinson; *Builder and Blunderer*, by George Saunders; *My Ideas and Ideals, Kaiser Wilhelm II; The Kaiser's War*, by Austin Harrison. Other studies of modern Germany are: *Germany's Madness*, by Dr. Emil Reich; *The German Empire's Hour of Destiny*, by Col. H. Frobenius; *The German Enigma*, translated from the French of Georges Bourdon; *Secrets of the German War Office*, by Dr. Armgaard Karl Graves (a work of very doubtful reliability); new editions of *Germany and the Germans*, journalistic sketches by Price Collier; and of William Harbutt Dawson's admirable work, *The Evolution of Modern Germany*, and his recent careful study of *Municipal Life and Government in Germany*. Other books more or less related to the present struggle include *Great Britain and the Next War*, by A. Conan Doyle, a remarkable piece of prophecy; *France Herself Again*, by Ernest Dimnet; *Italy's Foreign and Colonial Policy*, by Tommaso Tittoni; *Belgium*, by John MacDonnell; *Arms and Industry*, by "Norman Angell" (Ralph Norman Angell Lane).

Of course the war has called forth many works on the technical side of warfare, explaining the new inventions and new methods of organization which have made this conflict so radically different from the wars of the past. Perhaps the most interesting of these is *How Germany Makes War*, condensed from General von Bernhardi's *On War of To-day*. For light on relative personnel we have a series of books dealing with the French, British, Russian, and

German armies by men who have studied them from within. Among other studies of military science we may note: *Germany's Fighting Machine*, by E. F. Henderson; *Cavalry*, by Von Bernhardi; volume i of *The Principles of War*, by General E. A. Altham; *The Modern Army in Action*, by Gen. John F. O'Ryan and Capt. W. D. A. Anderson; *The Fleets at Sea*, by Archibald Hurd; *The Naval Battle*, by Lieut. A. Baudry; and *Operations Upon the Sea*, by Freiherr von Edelsheim.

FICTION. The year has seen little falling-off in the number of novels published, but those of distinction and arresting quality are rare. *The Wife of Sir Isaac Harman*, by Herbert George Wells, is another serious study of marriage, a subject to which this author returns again and again, his contention being that absolute autonomy is essential to any real happiness, especially to that of the wife. In *The World Set Free*, Mr. Wells writes a romance of the world inside the atom and earth's last war ended by releasing its energy. *The Last Shot*, by Frederick Palmer, startlingly prophetic of the war of 1914, is a realistic picture of modern warfare by an eye-witness of many battles. *War*, by W. Douglas Newton, treats of an invasion. *When Ghost Meets Ghost*, by William De Morgan, is a leisurely romance which reconstructs the London of 50 years ago. *Chance*, by Joseph Conrad, from the standpoint of artistry the greatest novel of the year, treats of the deep wisdom of the sea, and of the tragedy that comes from morbid self-distrust. *The Price of Love*, by Arnold Bennett, is another story of the Five Towns with a shabby, dishonest hero, and a lovable heroine. William J. Locke's new novel, *The Fortunate Youth*, is a fairy tale for fortunate readers, a Puss-in-boots for grown-ups. *The Three Sisters*, by May Sinclair, is a study of three temperaments. Other English novels selected—arbitrarily it may seem—for mention are: *The Pastor's Wife*, a tale of East Prussia by the author of *Elizabeth and Her German Garden*; *Full Swing*, by "Frank Danby," a pathetic study of a hard and inexpressive woman; *The Wanderer's Necklace*, by Sir H. Rider Haggard, which presents the Byzantine Empire at its height; *Waiting*, by Gerald O'Donovan, a propagandist novel of modern Ireland, containing a bitter arraignment of the priesthood; *The Encounter*, by Anne Douglas Sedgwick, which takes Nietzsche as its central figure; *Set to Partners*, by Mrs. Henry Dudeney, realism and a "triangle"; and *Children of the Dead End*, by Patrick MacGill, a semi-autobiographical novel about a young Irish navvy.

Among the American novels, *Diane and Her Friends*, by Arthur Sherburne Hardy, has the distinction of an exquisite style. *Perch of the Devil*, by Gertrude Atherton, shows the evolution of the wife of a successful Butte, Mont., miner. *Clark's Field*, by Robert Herrick, is a single-tax novel, the story of an unearned fortune and the experiences it brought to a neutral heroine. *The Titan*, by Theodore Dreiser, a sequel to *The Financier*, tells with wearisome detail the life of a successful brute and financial superman. *The Salamander*, by Owen Johnson, gives the sordid story of a woman who walks in the flame of passion untouched, and demands devotion and its material perquisites without any return. *Vandover and the Brute*, a posthumous novel from a strangely recovered manuscript of Frank Norris, depicts the degeneration of a soul. *Penrod*, by Booth Tarkington, adds another American boy to the Immortals. *The Witch*, by Mary Johnston, is a tale of witch-baiting in the spacious days of great Elizabeth. *The Rise of Jennie Cushing*, by Mary S. Watts, depicts a self-controlled heroine of strong appeal to the sympathies of the reader. *The Auction Block*, by Rex Beach, is an ugly story of a woman's soul bartered for money. *The Street of Seven Stars*, by Mary Roberts Rinehart, in refreshing contrast, is a sweet, clean tale of American student life in music-loving Vienna. Other cheerful and wholesome novels are: *Pierre Vinton*, by Edward C. Venable, the adventures of a superfluous husband, wittily told; *Angel Island*, a feministic allegory, by Inez Haynes Gilmore; *Little Eve Edgarton*, by Eleanor Hallowell Abbott, with an odd, impossible, but fascinating little heroine; *Bambi*, by Marjorie Benton Cooke, absurd, but vivacious; *A Stepdaughter of the Prairie*, by Margaret Lynn, a charming story of child life in the Missouri Valley; *Sunshine Jane*, by the late Anne Warner; *The Heart's Country*, by Mary Heaton Vorse, a girl's life in New England 50 years ago; *The Clarion*, by Samuel Hopkins Adams, a man's life-work; *Saturday's Child*, by Kathleen Norris, a story of work and of home; *Yourself and the Neighbors*, by Seumas MacManus—an American by residence, though in other respects entirely Hibernian—which tells of Irish life in a mountain parish. There are two novels which celebrate the Mississippi River: *Duciehurst*, by Charles Egbert Craddock; and *Gideon's Band*, by George W. Cable. *The New Clarion*, by William Nathaniel Harben, is another story of the Georgia mountains. *The Blind Spot*, by Justus Miles Forman, analyzes a reformer who preached the gospel of "Common Sense," but who lacked love and sympathy. In *Playing With Fire*, Amelia Edith (Huddleston) Barr returns to the Scotland of her girlhood. *The Victim: a Romance of the Real Jefferson Davis*, by Thomas Dixon, is semi-biographical. A few novels explicitly treat the marriage question: *Love's Legend*, by Harold Fielding-Hall, the man's and the woman's view of marriage; *The Raft*, by Coningsby (William) Dawson; and *World's End*, by Amélie Rives (Princess Troubetskoy). Good short stories are: *The Strength of the Strong*, by Jack London, stories of the Pacific; *Night Watches*, by William Wymark Jacobs, inimitable sketches of quaint English seafaring men; *Fables*, by Robert Louis Stevenson, a fortunate literary find, unpublished before his death; *At the Casa Napoleon*, by Thomas Janvier, six tales of Bohemian New York; *The Return of the Prodigal*, by May Sinclair; *The Copy-Cat and Other Stories*, by Mary E. Wilkins Freeman; the exquisite imaginative tales, breathing the perfume of the Orient, in the *Indian Stories* of F. W. Bain, and *A Sirup of the Bees*—purporting to be a translation of Indian originals—by the same author; and *The Incandescent Lily*, by Gouverneur Morris.

To Winston Churchill's *The Inside of the Cup* belongs the unique honor of heading the list of the best-selling books for two successive years. The other names on the 1914 list are also mostly of last year's output. In the order of popularity they are: *Pollyanna*, by Eleanor H. Porter; *The Fortunate Youth*, by William J. Locke; *Penrod*, by Booth Tarkington; *T. Tembarom*, by Frances Hodgson Burnett; *Laddie*, by Gene

Stratton Porter; *The Salamander,* by Owen Johnson; *The Dark Flower,* by John Galsworthy; *The Devil's Garden,* by William Babbington Maxwell. As a clue to the cause of popularity we may note that the books that head the list are wholesome and sunshiny presentments of life in England and the United States. The others are doubtfully ethical in trend, but more artistic in workmanship. None of them could be fairly counted as trash.

Essays and Literary Criticism. Essays, the product and resource of leisure, seem to have been growing in popularity. Among them, in almost equal numbers, are criticisms of books and criticisms of life. One of the most arresting of the latter type is *Human Quintessence*—English in translation at least—by Sigurd Ibsen, showing much of the bitterness and distrust of life characteristic of his distinguished father, and reversing the dictum of Rousseau, "Back to Nature," into "Away from Nature!" Another Scandinavian view is presented in *The Comedies of Holberg,* by Oscar James Campbell, important as the first book in English to give any extensive account of the greatest man of letters whom Denmark produced in the eighteenth century. *The Author's Craft,* by Arnold Bennett, is a defense of pot-boiler literature. *Appearances,* by G. Lowes Dickinson, gives vivid glimpses of the East and West. Mr. Arthur Christopher Benson in *Where No Fear Was* is reassuring and yet pensive as usual. *Notes on Novelists,* with some other notes by Henry James, discusses the art of imaginative prose from 1895 to 1914. *Pedestrian,* by George Macaulay Trevelyan, is admirable in style and spirit. Admirable, also, is the literary criticism of *Walt Whitman,* by Basil de Selincourt. Concerned with the drama we have: *Dramatic Actualities,* by W. L. George; and *Shakespeare Personally,* by David Masson. More general in scope are: *Impressions and Comments,* by Havelock Ellis; *Barn Doors and Byways,* by Walter Prichard Eaton; *The Americans and the Britons,* pointing a contrast unfavorable to America, by Frederick C. de Sumichrast; *Politics and History,* addresses by John Morley; *Meditations on Votes for Women,* by Samuel McChord Crothers, a genial, feministic view of the question; and *Major Prophets of To-day,* by Edwin Emery Slosson, studies of Maeterlinck, Bergson, Henri Poincaré, Metchnikoff, Ostwald, and Haeckel. *The Life and Genius of Nathaniel Hawthorne,* by Frank Preston Stearns, and *Joseph Conrad,* by Richard Curle, are adequate criticisms of two great novelists.

Drama. The "closet drama" has made way for plays that are both read and acted. Among the plays that are equally delightful on the stage and in the library are: *Half-Hours,* by James M. Barrie, containing four one-act plays: "Pantaloons," "The Twelve Pound Look," "Rosalind," and "The Will," full of fantasy and charm; *Androcles and the Lion,* a derisive but not unsympathetic treatment of the early Christian martyrs, by Bernard Shaw, and five other plays, *Pygmalion, The Great Catherine, Misalliance, The Dark Lady of the Sonnets,* and *Fanny's First Play,* by the same brilliant dramatist; *The Post Office,* and *The King of the Dark Chamber,* by Rabindra Nath Tagore; *Plays,* by John Galsworthy, containing "The Fugitive," "The Pigeon," and "The Mob"; and *Mary Goes First,* a comedy of social customs, by Henry Arthur Jones. Other plays, bright and readable, or otherwise notable are: *Romance,* New York in the 60's, by Edward Sheldon; *Nowadays,* a comedy, by George Middleton; and *A Pageant of the XIII Century,* written by John Erskine for the seven hundredth anniversary of Roger Bacon. Mr. Herbert F. Schwartz has done good work in reprinting, with complete and scholarly editorial equipment, *The Tragedy of Alphonsus, Emperor of Germany,* ascribed to George Chapman, and originally issued in 1654. A complete edition of the *Dramatic Works* of Gerhardt Hauptmann has been printed in English, and several translations have appeared of the plays of the Swedish dramatist, August Strindberg. The dramatic criticisms contained in the conversation of two gentle ghosts, Shakespeare and Francis Bacon, in *The Seen and the Unseen at Stratford-on-Avon,* by William Dean Howells, were, strangely enough, not included by Professors Neilson and Thorndike in their *All the Facts About Shakespeare.* Other valuable works of dramatic criticism are: *The Elizabethan Drama and Its Mad Folk,* by Edgar Allison Peers; *English Drama* and *Medieval Drama of England,* to Sheridan, 1779, by Felix Schelling; *The Theatre of Max Reinhardt,* by Huntly Carter; *The Theatre of To-day,* by Hiram Kelly Moderwell; *Criticism,* by W. C. Brownell; *On Acting,* by Brander Matthews; *Studies in Stagecraft,* by Clayton Hamilton; *Second Nights,* by Arthur Ruhl; *Our Irish Theatre,* by Lady Gregory; and *John Millington Synge and the Irish Theatre,* by Maurice Bourgeois.

Poetry. The increasing interest in poetry has been accelerated by the emotional stimulus of the war, which has called forth several volumes already: *Songs and Sonnets for England in War Time; Lord God of Battles,* compiled by A. E. Manning Foster; and *Poems of the Great War.* Most of this verse is of inferior quality, but Alfred Noyes and John Masefield have written noteworthy poems, though dwarfed by the enormity of a subject too vast for any poet to compass short of an epic. Four volumes of the work of last year's Nobel prizeman, Rabindra Nath Tagore, have appeared in English: *The Gardener; The Crescent Moon,* child poems; *Sādhañā, The Realization of Life;* and *Chitra.* Sir Sidney Colvin and Dr. E. Horner published two lost sonnets and several other poems of John Keats interesting to students and lovers of his verse. Thomas Hardy's *Satires of Circumstance* are depressing and wintry music, but music still. The Irish harp is swept by several hands: *Irish Poems* and *The Wild Harp,* by Katherine Tynana; *Irishry,* by Joseph Campbell; *Modern Anglo-Irish Verse,* by Padric Gregory; *Irish Literary and Musical Studies,* by Alfred Perceval Graves. George Edward Woodberry publishes a fourth volume of his fine poems in *Flight and Other Poems. The Shadow of Ætna,* by Louis Vernon Ledoux, contains poems of dignity and beauty. *Trees and Other Poems,* by Joyce Kilmer, show the poetry in common things. *The Lonely Dancer and Other Poems,* by Richard Le Gallienne, strike a new and manlier note. While not blind to the embarrassment of choice, we may mention also: *Saint-Gaudens an Ode, and Other Poems,* by Robert Underwood Johnson; *The Complete Poems* of S. Weir Mitchell, literary pastimes of the late novelist and scientist; *The Republic,* by the late Madison Cawein; *The Present Hour,* poems of war and peace, by Percy

Mackaye; *Pagan Poems*, by Professor Franklin H. Giddings, showing the noted American sociologist in a new rôle, and evincing at once his robust vigor and sensibility.

LITERARY BIOGRAPHY. The best biography of the year is unquestionably *Notes of a Son and Brother*, by Henry James, which is a sequel to *A Small Boy and Others*, and delightfully discourses of Henry James, Sr., of William James, and of the life about them from 1855 to 1870. Another autobiography dealing with a similar period is the charming *Memories of My Youth*, by George Haven Putnam. *My Autobiography*, by Samuel S. McClure, gives the story of an indomitable life. The ninth and tenth volumes of the *Journals of Ralph Waldo Emerson*, edited by Edward Waldo Emerson and Waldo Emerson Forbes, show no falling off in interest. *Thomas Wentworth Higginson: The Story of His Life*, by Mary Thacher Higginson, gives the well-told story of the last of the New England group of writers. *The Collected Essays of Edmund Gosse*, in five volumes, are full of Victorian portraits, limned with skill and charm. *William Morris*, by A. Clutton-Brock, adequately discusses the work and influence of the poet and craftsman. *In the Footsteps of the Brontës*, by Mrs. Ellis H. Chadwick, is zealous but undiscriminating. *A First Year in Canterbury Settlement*, with other early essays, by Samuel Butler, gives a bit of autobiography of a posthumous celebrity. *The Life of Matthew Prior*, by Francis Bickley, is worthy of mention; also *Ouida: a Memoir*, by Elizabeth Lee. A few able biographies of foreign men of letters remain to be mentioned: *Euripides and His Age*, by Gilbert Murray; *Paul Verlaine*, a sad story of wasted genius, by Wilfred Thorley; *Balzac*, and *Gustave Flaubert*, by Emile Faguet; *Reminiscences of Tolstoy*, by his son, Count Ilyá Tolstoy, translated by George Calderon, an intimate and tender tribute; and *Letters of Fyodor Michailovitch Dostoievsky*, translated by Ethel Colburn Mayne.

GENERAL BIOGRAPHY. The book of the year in the field of general biography is probably Katherine O'Shea's amazingly frank and intimate biography of *Charles Stewart Parnell*, but its importance is due rather to the interest of its revelations than to any literary merit in the book itself. A close second in frankness and interest, although as different as possible in subject, is the late Lester Frank Ward's *Glimpses of the Cosmos* in three volumes, a unique autobiography consisting of the author's early writings arranged in chronological order. A number of other valuable autobiographies have appeared, from which we may select: *Recollections of Bench and Bar*, by Viscount Alverstone; *The Memoirs of Admiral Lord Charles Beresford; Thirty Years' Anglo-French Reminiscences*, by Sir Thomas Barclay; *Memoirs of Youth, Things Seen and Known*, by Giovanni Venosta Visconti; *Forty Years of It*, by Brand Whitlock. Not a few of these self-portraits are of noted women, for example: *My Own Story*, by Emmeline Pankhurst; and *Julia Ward Howe and the Woman Suffrage Movement*, a compilation of her speeches and essays by her daughter, Florence Howe Hall.

There are the usual number of studies of European statesmen and warriors to record. Dealing with the perennial Napoleon, are: *The Decline and Fall of Napoleon*, by Field Marshal Viscount Wolseley; *Life of Napoleon*, by Major Arthur Griffiths; *Napoleon in Exile at Elba*, by Norwood Young. The year's biographies of British public men, include: *The Life of William Pitt, Earl of Chatham*, by Basil Williams; *Life of Walter Bagehot*, by his sister-in-law, Mrs. Russell Barrington; and the third volume of the *Life of Lord Beaconsfield*, by G. E. Buckle and the late W. F. Monypenny. Among American biographies those of President Lincoln continue to occupy a foremost place. Rose Strunsky in *Abraham Lincoln* deals primarily with the economic background of the slavery struggle, and Lincoln's position on the question is well outlined in *President Lincoln's Attitude Toward Slavery and Emancipation*, by the late Henry W. Wilbur. Other American biographies are: *John Hay, Author and Statesman*, by Lorenzo Sears; *Frémont and '49*, by Frederick Samuel Dellenbaugh; *Daniel Webster*, by Frederick Austin Ogg; *Confederate Portraits*, by Gamaliel Bradford, Jr.; *The Life of Robert Toombs*, by Ulrich Bonnell Phillips. The seventh centenary of the birth of Roger Bacon has attracted no little interest in academic circles, and as a result we have *Roger Bacon*, by Sir John Edwin Sandys, and *The Life and Work of Roger Bacon*, by J. H. Bridges.

HISTORY. The Great War abruptly truncated the production of works of general historical interest. In the latter part of the year, with few exceptions, the writers of history turned their attention to the problems of contemporary world politics. Very few works of outstanding importance appeared in 1914, and there has been no marked increase in the tendency so evident of late years toward economic and social rather than purely political history. On the contrary, such topics as have attracted particular attention lie for the most part in the fields of national development and of international relationships. The hundred years' peace between Great Britain and the United States is one of these topics, and William Archibald Dunning's *The British Empire and the United States* has superseded Senator Lodge's earlier work in the same field, *One Hundred Year's of Peace*, by its greater impartiality and adequacy. Several noteworthy books have appeared dealing with British imperialism: *The Ancient Roman Empire and the British Empire in India*, and *The Diffusion of Roman and British Law Throughout the World*, two studies by Viscount Bryce; *The Oxford Survey of the British Empire*, by A. J. Herbertson and O. J. R. Howarth, now complete in six volumes; *A History of England and of Greater Britain*, by Arthur Lyon Cross; *The Pan-Angles*, by Sinclair Kennedy, an appeal for federation; *A History of England and the British Empire*, by Arthur Donald Innes, carrying England's story down to the nineteenth century in three out of four volumes; *A History of England from the Defeat of the Armada to the Death of Elizabeth*, volume i, by Edward Potts Cheyney. Among many good studies of English history the following are, perhaps, best worthy of notice: *George III and Charles Fox*, volume ii, by Sir George Otto Trevelyan; *The Passing of the Great Reform Bill*, by James Ramsay Montagu Butler; *The Place of the Reign of Edward II in English History*, by Thomas Frederick Tout; and *British Shipping*, by A. W. Kirkaldy.

The two Balkan Wars have been discussed

from every angle, but their literary aftermath only increased with the temporary restoration of peace. Of exceptional importance is *The Report of the International Commission*, commonly called the "Carnegie Commission," which investigated conditions in the seat of war. Other books on the Near East include William Milligan Sloane's *The Balkans, a Laboratory of History; The Balkan Wars*, by Jacob Gould Schurman; *Turkish Memories*, by Sidney Whitman; *With the Turk in War Time*, by Marmaduke Pickthall; *Hellas and the Balkan War*, by D. J. Cassovetti; *The Inner History of the Balkan War*, by Lieut.-Col. Reginald Rankin; and *Albania, the Foundling State of Europe*, by Wadham Peacock. Russia has called forth a very considerable literature, from which we may select: *Russia: The Country of Extremes*, by Mme. N. Jarintzoff; *The Mainsprings of Russia*, by Maurice Baring; *A History of Russia*, by Vasilii Osipovich Kluchevski; *Economic History of Russia*, by James Mavor; *Russian Expansion on the Pacific*, by F. A. Golder. The Farther East is treated in: *Ancient India*, by Edward James Rapson; *Annals and Memoirs of the Court of Pekin*, by E. Backhouse and J. O. P. Bland; *China's Dayspring After Thirty Years*, by the Reverend Frederick Brown. Other studies of history, ancient and modern, that require notice, are: *Outlines of European History*, by James Harvey Robinson; *Roman Imperialism*, by Tenney Frank; *Ancient Rome and Modern America*, by Guglielmo Ferrero; *Republican Rome*, by Herbert Lorde Havell; *Chronicles of Three Free Cities: Hamburg, Bremen, Lübeck*, by Wilson King; *The Hussite Wars*, by Count Lützow; *My Days of Adventure*, by Alfred Vizetelly, chronicles of the Franco-Prussian War; *The French Revolution*, by H. Packwood Adams.

Several important books have appeared in American history. "American" history has come to mean more than the history of the United States proper, for *The Two Americas*, by Rafael Reyes of Colombia, *Latin America*, by William R. Shepherd, and Dean C. Worcester's monumental study of *The Philippines, Past and Present*, rank among the best books of the year. Interesting studies in the history of the United States, are: *Contemporary American History*, by Charles Austin Beard; *The Rise of the American People*, by Roland G. Usher; *Colonizing Activities of the English Puritans*, by Arthur Percival Newton; *Virginia Under the Stuarts*, by Thomas Jefferson Wertenbaker; *Narratives of the Witchcraft Cases*, by George Lincoln Burr; and *Political History of Secession*, by Daniel Wait Howe. Books on Mexico, giving very diverse views of local conditions and of the policies of the American government, include: *The Real Mexico*, by H. Hamilton Fyfe; *Modern Mexico*, by Robert Joseph MacHugh; *The Political Shame of Mexico*, by Edward Bell; *Insurgent Mexico*, by John Reed; and *The Mexican People: Their Struggle for Freedom*, by L. Gutierrez De Lara, and Edgcumb Pinchon.

TRAVEL AND DESCRIPTION. The year 1914 is marked by a rediscovery of the two Americas. A very considerable number of interesting and noteworthy books of travel in the western continent have appeared, but while there are numerous studies of political conditions in Europe, the number of noteworthy volumes of travel and description dealing with the old world is less than usual. Theodore Roosevelt's account of his trip *Through the Brazilian Wilderness* has enjoyed a great and deserved popularity. Two transatlantic writers of great charm have given appreciative pictures of the United States; Canon Hannay (writing as George A. Birmingham) in *From Dublin to Chicago*, and Stephen Graham in *With Poor Immigrants to America*. We have also a picture of *America Through the Spectacles of an Oriental Diplomat*, by Wu Ting Fang, twice minister to the United States. Two other intimate studies of the country and people, are *Abroad at Home*, by Julian Street, and *The Personality of American Cities*, by Edward Hungerford. Arch deacon Hudson Stuck has written vivid descriptions of Arctic travel in *Ten Thousand Miles With a Dog Sled*, and his *Ascent of Denali* (Mount McKinley). We have many other studies of Canada, Alaska, and the American northwest, and a thrilling account by Ellsworth L. Kolb of a trip *Through the Grand Canyon from Wyoming to Mexico*. Important travels in South America, are: *The Upper Reaches of the Amazon*, by Joseph F. Woodroffe; *The Amazing Argentine*, by John Foster Fraser; and Annie Smith Peck's *South American Tour*.

Central Asia and northern Africa continue to attract the attention of travelers and of booklovers. *Through Siberia*, by Fridtjof Nansen, is the most important book in the former field, but Ernest Henry Wilson's *Naturalist in Western China;* Francis Kingdon Ward's *Land of the Blue Poppy*, travels in Eastern Tibet; *The Cradle of Mankind*, by Edgar and W. A. Wigram; and *Unknown Mongolia*, by Douglas Carruthers, are also interesting. Recent travels in northern Africa, are: *North Africa and the Desert*, by George E. Woodberry; *The Women of Egypt*, by Elizabeth Cooper; *The Eastern Libyans*, by Oric Bates; *The New Tripoli*, by Ethel Braun. Other interesting travels, are: *Antarctic Adventures*, a tale of Scott's "Northern Party," by R. E. Priestley; *An Australasian Wander-Year*, by H. M. Vaughan; *A Woman in the Antipodes, and in the Far East*, by Mary Hall; *Ways of the South Sea Savage*, by Robert W. Williamson; *Through Europe on the Eve of War*, by Frederick Lynch; *Peaks and Precipices*, by Guido Rey, an account of mountaineering in the Dolomites and Savoy; *Travels in the Pyrenees*, by V. C. Scott O'Connor; *Tourist's Spain and Portugal*, by Ruth Kedzie Wood; and Hamilton Wright Mabie's *Japan, To-day and To-morrow*.

POLITICS AND SOCIOLOGY. The year has been exceptionally rich in general surveys of modern society. Herbert George Wells has collected his recent essays on many subjects into a single volume under the title *An Englishman Looks at the World*, containing among other discussions some remarkable forecasts of the character of modern war. Graham Wallas has produced in *The Great Society* a monumental study of the social mind in the present age. Of a general character are also *The Instinct of Workmanship and the State of the Industries*, an economic interpretation of civilization by Thorstein Veblen; *Interpretations and Forecasts*, by Victor Branford; *A Preface to Politics*, by Walter Lippmann; and Herbert Croly's *Progressive Democracy*. There are many studies of the conditions and characteristics of American politics: *American Public Opinion*, by James Davenport Whelpley; *American Citizenship*, by Charles Austin Beard and Mary Ritter Beard; *Party Government in the United States*, by William Milligan Sloane; *The Ameri-*

can Doctrine of Judicial Supremacy, by Charles Grove Haines; *The United States and Peace*, and *The Anti-Trust Act and the Supreme Court*, by William Howard Taft; *American Policy: The Western Hemisphere in its Relation to the Eastern*, by John Bigelow; and *American and English Studies*, by Whitelaw Reid.

The subjects which have attracted the particular attention of students of social science are the problem of immigration and racial relationship, and the problem of labor. *Jewish Life in Modern Times*, by Israel Cohen, and *Zionism*, by Richard Gottheil, are real contributions to the study of the Jewish people. The problems of immigration are treated in: *They Who Knock at Our Gates*, by Mary Antin; *The Old World in the New*, by Edward Alsworth Ross; *The American Japanese Problem*, by Sidney Lewis Gulick; and *Neighbors*, by the late Jacob August Riis. Noteworthy studies of modern labor questions are: *Work and Wealth*, by John Atkinson Hobson; *Wealth*, by Edwin Cannan; *Property and Contract in Their Relations to the Distribution of Wealth*, by Richard T. Ely; *Social Insurance*, by Isaac Max Rubinow; *Labor and Administration*, by John N. R. Commons; *Boycotts and the Labor Struggle*, by Harry Wellington Laidler; *Violence and the Labor Movement*, by Robert Hunter; *The Job, the Man, the Boss*, by Katherine Blackford and Arthur Newcomb; *The Psychology of Management*, by Lillian Moller Gilbreth. Socialism is discussed in *The Younger Generation*, by Ellen Key; *Socialism and Motherhood*, by John Spargo; and *Socialism, Promise or Menace?*, a debate by Morris Hillquit and the Reverend John Augustine Ryan.

RELIGION. The principal book of the year on religion is easily *Balder the Beautiful, The Fire Festivals of Europe and the Doctrine of the External Soul*, by James George Frazer, the two volumes of which complete the monumental work in ten volumes entitled *The Golden Bough*, a most exhaustive study of primitive religion. Mrs. Elsie Worthington (Clews) Parsons (John Main, pseudonym) treats of a particular section of ethnology, dealing with the treatment of widows, in *Religious Chastity*. *Religious Ideas of the Old Testament*, by Henry Wheeler Robinson, is clear and adequate in its presentment of the religious views of the ancient Hebrews. *Hebrew and Babylonian Traditions*, by Morris Jastrow, is a scholarly and reverent discussion of the subject by a competent authority. *English Church Life from the Restoration to the Tractarian Movement*, by J. Wickham Legg, and *A History of the Church in Scotland*, by Alexander R. Macewen, are sober and judicial surveys. *Religion and Life*, by Elwood Worcester, prophesies a great religious revival imminent in America. *The Spiritual Message of Dante*, contains lectures delivered at Harvard by William Boyd Carpenter. The problem of determinism is debated in: *Religion and Free Will*, by W. Bennett, and *Fated or Free*, a Dialogue on Destiny, by Preston William Slosson. *Freedom and the Churches*, edited by Charles William Wendte, a compilation of ten addresses before a liberal religious congress held in Rochester, N. Y., each by a prominent representative of his church, discusses a different sort of freedom, a newly granted ecclesiastical one. There are many volumes on church history, a score on the English Church alone, and many more on personal religion which cannot be commented on here, but which indicate an unflagging interest in religious customs, thought, and life. There is a valuable work by Crawford Howell Toy, *An Introduction to the History of Religions*. Other books in the same field are: *The History of Religions*, by George Fort Moore; *The Faith of Japan*, by Dr. Tasaku Haroda, president of the Doshisha University at Kyoto; *The Reformation in Germany*, by Henry Clay Vedder; *Roman Ideas of Deity in the Last Century Before the Christian Era*, by William Warde Fowler; and *The Freedom of Science*, by Joseph Donat, S.J., a defense of the Roman Catholic Church. *The Carpenter and the Rich Man*, by Bouck White, is an impassioned social protest. *Jesus and His Parables* is a fresh and vigorous presentment of the theme, by George Murray. Other works on some aspect of religion worthy of note are: *Faith and The Faith*, by Dean Samuel Hart; *The Working Faith of a Liberal Theologian*, by T. Rhondda Williams; *The Message of David Swing to His Generation*, edited by Newell Dwight Hillis; *Vital Problems of Religion*, by J. R. Cohn; *The Girl and Her Religion*, by Margaret Slattery; *Constructive Natural Theology*, by Newman Smyth; *The Spiritual Interpretation of Nature*, by James Y. Simpson; *Gospel Origins*, by W. W. Holdsworth; *The Theology of the Gospels*, by James Moffat; *The Prophets of Israel*, treating especially of Jeremiah; *The Ethical Implications of Bergson's Philosophy*, by Una Bernhard Sait; *What Men Live By*, by Richard C. Cabot, who names as essential to health and usefulness, work, love, play, and worship.

Other books of the year, especially those of a technical character, will be found in the special bibliographies attached to the articles on those subjects.

LIVESTOCK. See STOCK RAISING.

LOAN AND TRUST COMPANIES. These banking institutions which commonly go by the name of trust companies numbered 1564 on June 30, 1914. Their rapid increase is shown by the fact that in 1905 they numbered only 683, and only 1091 in 1910. Though still relatively not numerous, their banking importance is considerable. They were distributed as follows: New England, 208; Eastern States, 517; Southern States, 352; Middle Western States, 364; Western States, 61; and Pacific States, 62. Their aggregate resources were $5,489,531,000. Of this, loans and discounts constituted $2,901,748,000; and investments in stocks and bonds, $1,261,345,000. Their individual deposits totaled $3,939,807,000, of which 60 per cent were subject to check and 25 per cent were savings deposits. See also the article on BANKS AND BANKING.

LOCKWOOD, WILTON. An American portrait and flower painter, died March 21, 1914. He was born at Wilton, Conn., Sept. 12, 1861, and studied under John La Farge in New York, and for 10 years in Paris. He exhibited at the Carnegie Institute, Pittsburgh, Pa., in 1897; received the Temple Fund gold medal from the Pennsylvania Academy of Fine Arts for "The Violinist" (now at Skibo Castle, Scotland) in 1898; and for other exhibits he was awarded silver medals at the Paris (1900), Buffalo (1901), and St. Louis (1904) expositions. In 1904 also he exhibited abroad with success. His better known portraits include: "Frank Seabury"; "A. J. Cassatt"; "Mrs. Sweetser"; "Grover Cleveland"; "John La Farge" (Boston

Museum); "Jerome Wheelock" (Worcester Museum); and "Justice Holmes" (1912, Massachusetts Bar Association). Among his flower paintings those of peonies are especially known. Lockwood was elected a member of the National Academy in 1912.

LOCOMOTIVES. See Railways, under *Motive Power* and *Equipment*.

LONDON. See Great Britain.

LONGEVITY. See Marriage and Divorce.

LOUISIANA. Population. The estimated population on July 1, 1914, was 1,773,482. The population in 1910 was 1,656,388.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only:

		Acreage	*Prod. bu.*	*Value*
Corn	1914	2,000,000	38,600,000	$28,950,000
	1913	1,900,000	41,800,000	32,186,000
Oats	1914	70,000	1,610,000	1,014,000
	1913	45,000	990,000	564,000
Rice	1914	336,500	10,802,000	10,046,000
	1913	405,500	11,760,000	9,878,000
Potatoes	.1914	24,000	1,680,000	1,630,000
	1913	25,000	1,750,000	1,680,000
Hay	1914	200,000	*a* 380,000	4,560,000
	1913	160,000	240,000	3,000,000
Tobacco	..1914	700	*b* 280,000	98,000
	1913	600	270,000	68,000
Cotton	...1914	1,360,000	*c* 460,000	15,184,000
	1913	1,244,000	444,000	24,840,000

a Tons.
b Pounds.
c Bales.

Mineral Production. Since 1904 Louisiana has stood preëminently in the lead as a producer of sulphur, due to the development of the Frasch recovery process. The total marketed production of sulphur in the United States in 1913, was 311,590 long tons, most of which was from Louisiana. The figures of the State's production may not be published because of the necessity for maintaining the confidential character of individual reports. The quantity of sulphur actually produced was considerably in excess of that marketed in both 1912 and 1913. A large amount of petroleum is also produced in the State. The production in 1913 was 12,498,828 barrels, valued at $12,255,931, compared with 9,263,439 barrels, valued at $7,023,827, in 1912. During the 10 years of the production of petroleum in the State the activities have shifted from the southern to the northern part of the State, and at the present time the larger part of the production is from the Caddo district, in the northwestern part of the State, Acadia and Calcasiue parishes being the principal producers in the southwestern part. During the last two or three years there has been considerable development of natural gas and the production of this fuel in 1913 exceeded $2,000,000. There is good reason to believe that Louisiana is underlaid by one of the greatest gas fields in the United States, but its development on a large scale must await the establishment of manufacturing industries which will provide for its utilization, or it must be transported by pipe lines to distant points for consumption. Louisiana is also an important producer of rock salt, in the value of which it ranks second among the States, and in the total production of salt, which includes the product from brine, Louisiana ranks sixth in value among the States. Other important mineral products are clay, sand and gravel, stone, and mineral waters. The total value of the mineral products in 1913 was $21,011,828, compared with $15,357,841 in 1912.

Transportation. The total mileage of all track operated by railways in the State in 1913 was 6897, of which 3889 miles was single track main line, 1343 branches and spurs, 1477 yard track and sidings, and 186 second track. The roads having the longest mileage are the St. Louis, Iron Mountain, and Southern, 462; Texas and Pacific, 339; New Orleans, Texas, and Mexico, 202; Louisiana Railway and Navigation Company, 303; Kansas City Southern, 245; Louisiana and Arkansas Railway Company, 198.

Education. The total school population of the State in 1914 was 526,268, the total enrollment was 288,972, and the average daily attendance was 199,103. The female teachers numbered 5491 and the males 1361. The average monthly salary of male teachers was $80.87 and of female teachers $58.70. The Legislature of 1914 passed several important measures, including a compulsory education law, relating to all cities of over 25,000 inhabitants (except the parish of Orleans). Parents of children between the ages of 8 and 14 years in such cities are required to send children to school at least four months in the year, provided that separate public schools for the races are open to receive such children for that time in each year. The parish board of school directors of any parish is given authority to call a special election for the purpose of submitting to the qualified electors a proposition to provide for the compulsory attendance of children in elementary and high schools.

Charities and Corrections. The charitable and correctional institutions of the State include the Institute for the Deaf and Dumb, the Institute for the Blind at Baton Rouge; Insane Asylum at Jackson; Soldiers' Home, Charity Hospital at New Orleans; Charity Hospital at Shreveport; and the State Penitentiary and convict farms. These farms are in West Feliciana parish and Iberia parish, where they have been in operation for several years with gratifying results.

Finance. The report of the State Treasurer for the fiscal year 1913 shows a cash balance in the treasury on Jan. 1, 1913, of $850,025. The total receipts for the year amounted to $8,203,465. The total disbursements amounted to $7,365,208, leaving a balance on hand at the end of the year of $1,062,174. Outstanding bonds to the amount of $11,108,300 were due on Jan. 1, 1914, and these were retired in accordance with the public debt ordinance adopted by the constitutional convention of 1913.

Politics and Government. The State Legislature met in 1914 as the sessions are biennial and are held in even years, but no measures were passed of general interest. The State elections in 1914 were for representatives in Congress only, as the term of Governor Hall does not expire until 1916. In the early part of September Colonel Roosevelt addressed large audiences in the State, applying Progressive principles to local problems. In the elections held on November 3 the Democrats elected representatives in all districts except one, the third, in which the Progressive candidate was successful. The total vote cast in this election was 50,901, compared with 79,372 cast in the presidential election of 1912. As the State is overwhelmingly Democratic there is no particular significance in the decreased vote.

STATE GOVERNMENT. Governor, L. E. Hall; Lieutenant-Governor, T. C. Barrett; Secretary of State, Alvin E. Hebert; Auditor, Paul Capdeville; Treasurer, L. E. Smith; Attorney-General, R. G. Pleasant; Superintendent of Education, T. H. Harris; Commissioner of Agriculture, E. O. Bruner; Commissioner of Insurance, A. E. Hebert; Commissioner of Public Lands, Fred J. Grace—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, F. A. Monroe; Associate Justices, O. O. Provosty, A. D. Land, W. B. Sommerville, Chas. A. O'Neill; Clerk, Paul E. Mortimer—all Democrats.

STATE LEGISLATURE, 1915. Both Houses Democratic.

The State representatives in Congress will be found in the section *Congress*, article UNITED STATES.

LOUVAIN, DESTRUCTION OF. See WAR OF THE NATIONS.

LOUVRE, ITS RECEPTION OF THE COUNT COMANDO COLLECTION. See PAINTING AND SCULPTURE.

LOW TEMPERATURE WORK. See PHYSICS.

LUBLINITE. See MINERALOGY.

LUCAS, REGINALD JAFFRAY. An English writer, died May 9, 1914. He was born in 1865, and was educated at Eton and at Trinity College, Cambridge. He served as member of Parliament from 1900 to 1906. His published writings include: a novel, *Felix Dorreen; George II and His Ministers; Colonel Saunderson, M.P.; A Memoir; Another Point of View;* and *The Measure of One's Thoughts.*

LUNACY. See INSANITY.

LURTON, HORACE HARMON. Associate justice of the United States Supreme Court, died July 12, 1914. He was born at Newport, Ky., in 1844, and was educated in the public schools of the neighborhood and in Douglas and Cumberland Universities. At the outbreak of the Civil War he enlisted, serving in the Thirty-fifth Tennessee Regiment as a sergeant-major. He was several times mentioned for bravery, but owing to ill health obtained a discharge from the army in 1862. After he had regained his health he enlisted and took part in the battle of Fort Donelson, when he was taken a prisoner and was sent to Camp Chase, from which he made his escape after two months' confinement. He again enlisted, this time in the Third Kentucky Cavalry, and while a member of Morgan's Raiders he was captured for a second time, remaining imprisoned until President Lincoln brought about his release near the close of the war. His health was shattered by his experiences, but he regained it and returned to his studies, receiving in 1867 the degree of bachelor of laws from Cumberland University, and in the same year being admitted to the bar. He took up the practice of his profession at Clarksville, Tenn., and soon attracted attention as a close student of law, a reputation which he held ever afterward. In 1874 he was appointed chancellor to fill a vacancy in the Sixth Chancery Division of Tennessee, and two years later was reëlected without opposition for the full term, but in 1878 he resigned and returned to his law practice. He was elected a judge of the Supreme Court of Tennessee in 1886 and Chief Justice of the State in January, 1893. Two months later President Cleveland appointed him a circuit judge for the Sixth Judicial Circuit of the United States, embracing Ohio, Michigan, Kentucky, and Tennessee. William H. Taft was at this time a circuit judge in the same circuit, and before he was appointed Governor of the Philippines in 1898, had become a close personal friend of Judge Lurton. In December, 1909, Judge Lurton was appointed by President Taft associate justice of the United States Supreme Court, and was assigned to the circuit embracing Vermont, Connecticut, and New York.

LUTHERANS. The Lutheran Church is the third largest Protestant denomination in the United States. In 1914 there were in the United States and Canada 2,444,970 communicants, 60 synods, 16,220 churches, and 9450 ministers. The value of church property was about $100,000,000. No form of church government is considered essential, and the denomination is carried on under Congregational, Episcopal, and Presbyterian forms. There are four general church bodies: the General Council, founded 1867; General Synod, founded 1820; Synodical Conference, founded 1872; United Synod of the South, founded 1886; besides a number of independent synods.

GENERAL COUNCIL. Ministers, 1595; churches, 2377; communicants, 479,765; Sunday schools, 1032; officers and teachers, 29,725; scholars, 279,697; parochial schools, 620; teachers, 754; pupils, 26,818.

GENERAL SYNOD. Ministers, 1395; churches, 1847; communicants, 340,441; Sunday schools, 1735; officers and teachers, 28,353; scholars, 275,346.

SYNODICAL CONFERENCE. Ministers, 3046; churches, 4812; communicants, 850,772; Sunday schools, 692; officers and teachers, 2985; scholars, 154,660; parochial schools, 2812; teachers, 1500; pupils, 154,116.

UNITED SYNOD OF THE SOUTH. Ministers, 274; churches, 488; communicants, 52,188; Sunday schools, 415; officers and teachers, 4232; scholars, 36,875.

INDEPENDENT SYNODS. Ministers, 3140; churches, 6696; communicants, 721,804; Sunday schools, 2049; officers and teachers, 10,817; scholars, 181,159.

During 1914 the work of Christian education has been prosecuted with unusual energy. The interests of the General Council's Theological Seminaries have been advanced, their endowments and equipment having been strengthened; and new educational institutions were founded in the younger synods. Progress was made toward securing the $500,000 educational fund for the Philadelphia Theological Seminary, and Muhlenberg College. It was also practically agreed among the church authorities in Pennsylvania that the minimum ministerial salary ought to be $1000. The golden jubilee of the Philadelphia Theological Seminary was held in 1914. In the District Synod of Ohio a resolution was passed to endow the Synod's professorship in the Chicago Theological Seminary with the sum of $50,000. At the same time it was resolved to aid in founding a tri-synodial college for the Middle West. Other educational institutions aided by increased endowments were Gustavus Adolphus College, St. Peter, Minnesota, and Bethany College, Kansas. In the Ontario Synod the Lutheran Theological Seminary at Waterloo was enlarged and improved. In the Manitoba Synod a new Lutheran College was opened at Saskatoon, Province of Saskatchewan. It has been decided to remove the Lutheran Seminary in the Pacific Synod from Portland, Ore., to Seattle. Abroad a great meeting of Lutherans was held at Heidelberg to protest against so-called "liberal" attempts to change or eliminate the apostolic creed, and similar meetings of protest were held in other parts of Germany. The Lutheran Church in France is maintaining itself vigorously under grave difficulties; in Spain slow but steady progress is being made. In Scandinavia "liberal" professors and preachers have done much to disturb orthodox believers. See also RELIGIOUS DENOMINATIONS AND MOVEMENTS.

LUXEMBURG. A central European grand duchy, neutral, and independent, bordered by Belgium, Germany, and France. The area is 2586 square kilometers, or 998 square miles, carrying a population Dec. 1, 1910, of 259,891, of whom 134,101 were males and 125,790 were females. There were 250,543 Roman Catholics, 4007 Protestants, 1270 Jews. The capital is Luxemburg, with 20,408 inhabitants. Iron is mined—1,728,973 metric tons in 1911 and 2,252,229 tons in 1912. The area under principal crops in hectares and the yield in quintals for two years are shown in the table below, with the yield per hectare in 1912–13.

	Hectares		*Quintals*		*Qs. ha.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	
Wheat	10,886	11,180	175,857	166,950	16.1
Rye	10,388	10,600	173,961	159,000	16.7
Barley	1,536	1,200	25,206	17,400	16.4
Oats	31,254	31,200	528,288	592,800	16.9
Vines *	1,515	1,515	3,817	37,875	2.5

* Production in hectoliters.

Luxemburg belongs to the German customs union. There were 625 kilometers of railway in 1911. The revenue for 1914 was estimated at 22,017,337 francs (18,101,733 in 1913), and the expenditure at 23,440,531 (20,484,564). These figures include extraordinary. Debt, 12,000,000 francs; annuities, 493,150 francs. Grand Duchess in 1914, Marie Adelaide, born June 14, 1894, crowned June 14, 1912. Heiress-presumptive, Princess Charlotte, born 1896. See also WAR OF THE NATIONS.

HISTORY. Luxemburg was invaded by German troops on August 2. By refraining from armed resistance to this violation of its neutrality, Luxemburg avoided the calamities which overtook Belgium. Late in November the amount of the indemnity paid to Luxemburg by Germany, in consequence of the German invasion, was estimated at $256,000. For information regarding the belligerent operations in the grand duchy, consult the article on the WAR OF THE NATIONS.

LYDECKER, GARRETT J. American soldier and engineer, died July 9, 1914. He was born at Englewood, N. J., in 1843, and after studying at the College of the City of New York, entered the United States Military Academy from which he graduated in 1864, being appointed first lieutenant of engineers in the same year. He was made captain in 1866, major in 1880, lieutenant-colonel in 1891, colonel in 1901, and brigadier-general and retired by operation of law in 1907. In 1865 he was brevetted captain for "gallant and meritorious services" at the siege of Petersburg, Va. He was engaged in river and harbor work at Galveston, Michigan City, New Orleans, Chicago, Detroit, etc.

LYON, GEORGE ARMSTRONG. An admiral (retired) of the United States navy, died March 6, 1914. He was born in Erie, Pa., in 1837, and graduated from Dartmouth College in 1858, after which he studied law, and in 1861 was admitted to the bar. In the following year he abandoned his practice and was appointed assistant paymaster in the United States navy. He served throughout the Civil War and at its close had the rank of paymaster, being appointed pay-inspector in 1888, and in 1898 pay-director. In 1899 he was retired with the rank of rear admiral given him for services during the Civil War.

MACAO. A city on the Chinese island of Macao; a Portuguese dependency, with Coloane and Taipa. Area, 4 square miles, with 74,866 inhabitants.

MACBRIDE, THOMAS HUSTON. An American educator, elected in 1914 president of Iowa State University. He was born in Rogersville, Tenn., in 1848, graduated from Monmouth College in 1869, from 1870 to 1878 was professor of mathematics and modern languages at Lenox College, and from 1878 to 1884 assistant professor of natural sciences at the State University of Iowa, where from 1884 to the time of his election as president he held the chair of botany. He received the honorary degree of Ph.D. from Lenox College in 1895. Dr. Macbride is a member of several scientific societies and is the author of a textbook on botany; *North American Slime Moulds;* and many lectures and addresses.

McCASKEY, WILLIAM SPENCER. An American soldier, died Aug. 10, 1914. He was born in Lancaster Co., Pa., in 1843; educated in the public schools of that city; and was one of the first 75,000 men enrolled as volunteers in the Civil War. He served throughout the war and was honorably mustered out in 1865, having attained the rank of captain. In 1866 he was appointed first lieutenant in the Thirteenth United States Infantry; being promoted through successive grades he became colonel in 1900, brigadier-general in 1904, and major-general in 1907. He took part in the Cuban campaign in 1898 and was in the Philippines in 1899, and again in 1902. In 1902–03 he commanded at Fort Sheridan, Ill., and later commanded departments of the Colorado, Texas, and Dakota. He retired from active service in 1907.

McCLUNG, LEE. American public official, died Dec. 19, 1914. He was born in Knoxville, Tenn., in 1870, and was graduated from Yale in 1892. After extensive travel in Europe he became paymaster of the St. Paul and Duluth Railroad Co., becoming assistant to the second vice-president of the Southern Railway in 1901, and assistant manager of the road in 1902. In 1904 he was appointed treasurer of Yale University and served in that office until he was appointed Treasurer of the United States by President Taft, which post he resigned in 1912, on account of friction with Secretary MacVeagh. Mr. McClung was one of the most famous athletes ever graduated from Yale, being especially prominent in foot-ball and captain of the famous Yale team of 1892.

MAC CRACKEN, HENRY NOBLE. An American scholar and educator, elected president of

Vassar College on Dec. 15, 1914. He was born in Toledo, Ohio, in 1880, the son of Henry Mitchell MacCracken, chancellor emeritus of New York University, and brother of John Henry Mac Cracken (q.v.), president of Lafayette College. He graduated from New York University in 1900 and was for the three years succeeding instructor in English in the Protestant College in Beirut, Syria. Returning to the United States he took post-graduate courses and received the degree of M.A. from New York and Harvard Universities. From the latter university he received the degree of Ph.D. in 1907, and in 1907–08 was created a John Harvard fellow. He was for five years connected with the English department of the Sheffield Scientific School at Yale, as instructor and assistant professor. In 1913 he was chosen professor of English at Smith College and held this position at the time of his election as president of Vassar. Dr. MacCracken edited: John Lydgate's *Serpent of Division; Minor Poems of John Lydgate; The College Chaucer*, and has written several text books. He is a frequent contributor to educational journals.

MAC CRACKEN, John Henry. American educator, elected in 1914 president of Lafayette College. He was born in Rochester, Vt., in 1875, the son of Henry Mitchell MacCracken, for many years chancellor of New York University, and the brother of Henry Noble MacCracken (q.v.). He graduated from New York University in 1894 and in the year following studied at the Union Theological Seminary. After spending several years in study in Germany he was appointed A. Ogden Butler fellow in philosophy at New York University, where he was instructor in philosophy from 1896 to 1899 and assistant professor in the latter year. From 1899 to 1903 he was president of Westminster College, Mo., resigning this position in the latter year to become syndic and professor of politics at New York University, which chair he held at the time of his election as president of Lafayette College.

McCUTCHEON, James. An American merchant, died July 20, 1914. He was born in County Down, Ireland, in 1842, and removed to the United States in 1860. He started in the linen business with his uncle, John Milliken, at Broadway and Astor Place, New York City, and after his uncle's retirement became the proprietor of the store. From then until 1906 he enlarged his business and removed several times until finally he built a large store at the corner of Fifth Avenue and Thirty-fourth Street. Mr. McCutcheon was contemporaneous with a group of men from the north of Ireland, such as A. T. Stewart, Hugh O'Neill, and James McCreery, who for many years controlled the retail dry goods business in New York. He was director or official in many financial institutions and enterprises.

MAC DOUGALL, Clinton Dugald. An American soldier, died May 24, 1914. He was born in Glasgow, Scotland, in 1839, and early in life removed to the United States, graduating from Jordan Academy in 1853. In 1861 he was appointed captain of the 75th New York Infantry, and rose in rank until in 1865 he was brevetted brigadier-general of volunteers "for gallant and meritorious services"; commanding successively a brigade and division in the Army of the Potomac. In the grand review held in Washington in May, 1865, he commanded the first division of the second army corps. From 1869 till 1873 he was postmaster at Auburn, N. Y., and from 1873 till 1877 was member of Congress, afterwards serving as United States Marshal of the Northern District of New York from 1877 to 1885. He declined the positions of consul-general at London and Paris tendered him by President Hayes, and also declined the treasurership of the United States, and positions of Commissioner of Internal Revenue and Commissioner of Patents. From 1901 to 1911 he again served as marshal of the Northern District of New York.

McGILL UNIVERSITY. An institution for higher education, founded at Montreal, Canada, in 1821. The students enrolled in all departments in the autumn of 1914 amounted to 1600. The faculty numbered 265. During the year Dr. A. Campbell Geddes was appointed professor of anatomy. Robert Warden, formerly of Oxford University, was appointed professor of Roman law and dean of the faculty of law. G. R. Mines, formerly of Cambridge University, was appointed professor of psychology. Professor Mines was accidentally killed in the laboratory while performing experiments. Dr. H. S. Birkett was appointed dean of the faculty of medicine. The noteworthy benefactions during the year included an endowment fund of $25,000 from the heirs of the late J. Thomas Molson; $22,920 from the estate of G. B. Cramp; and $1,000,000 from the estate of James Ross. The endowment funds of the university amount to about $8,207,000 and the annual income from all sources to about $820,000. The library contains 184,000 volumes. The principal is W. Peterson.

McINTYRE, Robert. An American bishop of the Methodist Episcopal Church, died Aug. 31, 1914. He was born in Selkirk, Scotland, in 1851; in his youth worked as a mill worker and bricklayer; removed to the United States and became a student at Vanderbilt University in 1877. In the following year he was ordained into the ministry and served as pastor in churches in Charleston, Chicago, Denver, and Los Angeles. In 1908 he was elected bishop. He was the author of several volumes of poems including: *At Early Candle Light* (1899); and *A Modern Apollos*.

MC LEARY, James Harvey. An American jurist, died Jan. 6, 1914. He was born in Smith Co., Tenn., in 1845; from 1861 to 1865 he served in the Confederate Army, and after the close of the Civil War entered Washington and Lee University from which he graduated in 1868. He then studied law, taking the degree of LL.B. in the following year, and in 1868–69 he was assistant professor of English at Washington College. He practiced law at San Antonio, Texas, thereafter until 1898. From 1874 to 1877 he was a member of the Texas Legislature, and in 1881–82 was Attorney-General of that State. He was appointed justice of the Supreme Court of Montana in 1886, serving two years. During the war with Spain he acted as major and inspector-general of the United States Volunteers in Cuba. In the same year he was appointed alcalde at Santiago de Cuba. He served in this post until 1901, when he was appointed assistant secretary of Porto Rico. In the same year he received the appointment of associate justice of the Supreme Court of Porto Rico, and he held this post until the time of his death. He was a member of several scientific societies.

MAC MILLAN (CROCKER LAND) EXPEDITION. See POLAR RESEARCH, *Arctic.*

MACNAB, ANGUS. A British ophthalmologist, died in the early part of November, 1914, as the result of a wound received on the battle line in the war in Europe. He received his medical education at Edinburgh, Moorfields, Freiburg, and Vienna. After the outbreak of the European War he was appointed medical officer of the newly formed London Scottish Regiment. He received his wound while aiding the wounded in the trenches. He was the translator of Axenfeld's *Bacteriology of the Eye* and of Lolunaun's *Disturbances of the Visual Functions.*

MADAGASCAR. A French colony off the east African coast, composed of a large island in the Indian Ocean and its dependencies, Diégo-Suarez, Nosy-Bé, and Ste. Marie. Antananarivo (Tananarive) is the capital, with 72,000 inhabitants.

The area of Madagascar is 585,300 square kilometers (225,984 square miles); with dependencies, 585,533 square kilometers. The population according to the census of 1911 was 3,104,881; with dependencies, 3,154,000—3,198.889 and 3,293,552 in 1913. The population of Madagascar as calculated Jan. 1, 1914, was 3,253,581—14,918 Europeans, 12,905 Asiatics and Africans, 3,225,758 aborigines; total population with dependencies, 3,351,481. With the exception of New Guinea (785,000, square kilometers) and Borneo (733,000), Madagascar is the largest island in the world. The Hova inhabit that portion of the central plateau now known as Imerina, anciently called Ankova—the country of the Hova. There is no doubt that the Hova are descendants of immigrants of the Malayo-Polynesian race. They are light colored, with regular features; extremely intelligent, assimilative, and laborious. The region south of Imerina as far as the northern frontier of the Bara is inhabited by the Betsileo—formerly called Andriambohitsombilahy, "lords of the mountain rich in beeves"; these people number about 500,000, and are indolent, drunken, and superstitious. The Bara, the Sakalava, and the Mahafaly are warlike tribes devoted to pillage. Malagasy is the language of the island, different tribes speaking different dialects. The Hova dialect is the written one. Rice is the most important native cultivation. From 1896 to 1900 the colony imported rice to the value of nearly 800,000 francs annually; in 1901 the import of rice was valued at 5,640,636 francs. From that date imports decreased annually until in 1912 only 20,000 francs were expended for this staple, while the export of rice for that year was 7420 tons, valued at 1,675,773 francs. Encouraged by the government, the cultivation of rice now extends over 396,130 hectares. Planted to manioc in 1912 were 184,220 hectares; corn, 42,000. The export of native peas was valued in 1912 at 2,687,657 francs; vanilla, 3,941,521; coffee, 348,984. The forests yield ebony, rubber, raffia, and wax. Cattle raising is carried on, and notwithstanding the primitive methods of the natives the natural conditions are so favorable to this industry that the herds increase enormously from year to year. A livestock census is taken annually on account of the tax levied; in 1904, 2,342,792 cattle were returned; in 1908, 3,812,671; in 1910, 4,492,131; in 1912, 5,722,735. These figures do not include calves; neither do they include wild cattle, which exist in great numbers in the western regions. The export of raw hides in 1912 was valued at 10,752,572 francs and the export of live animals and preserved meats at 1,008,685 francs. The mines yield gold, silver, iron, copper, lead, and zinc.

In the table below are shown imports and exports for three years:

	1900	*1911*	*1912*
Imports	40,470,813	44,763,892	50,034.848
Exports	10,623,869	47,535,361	59,844,294

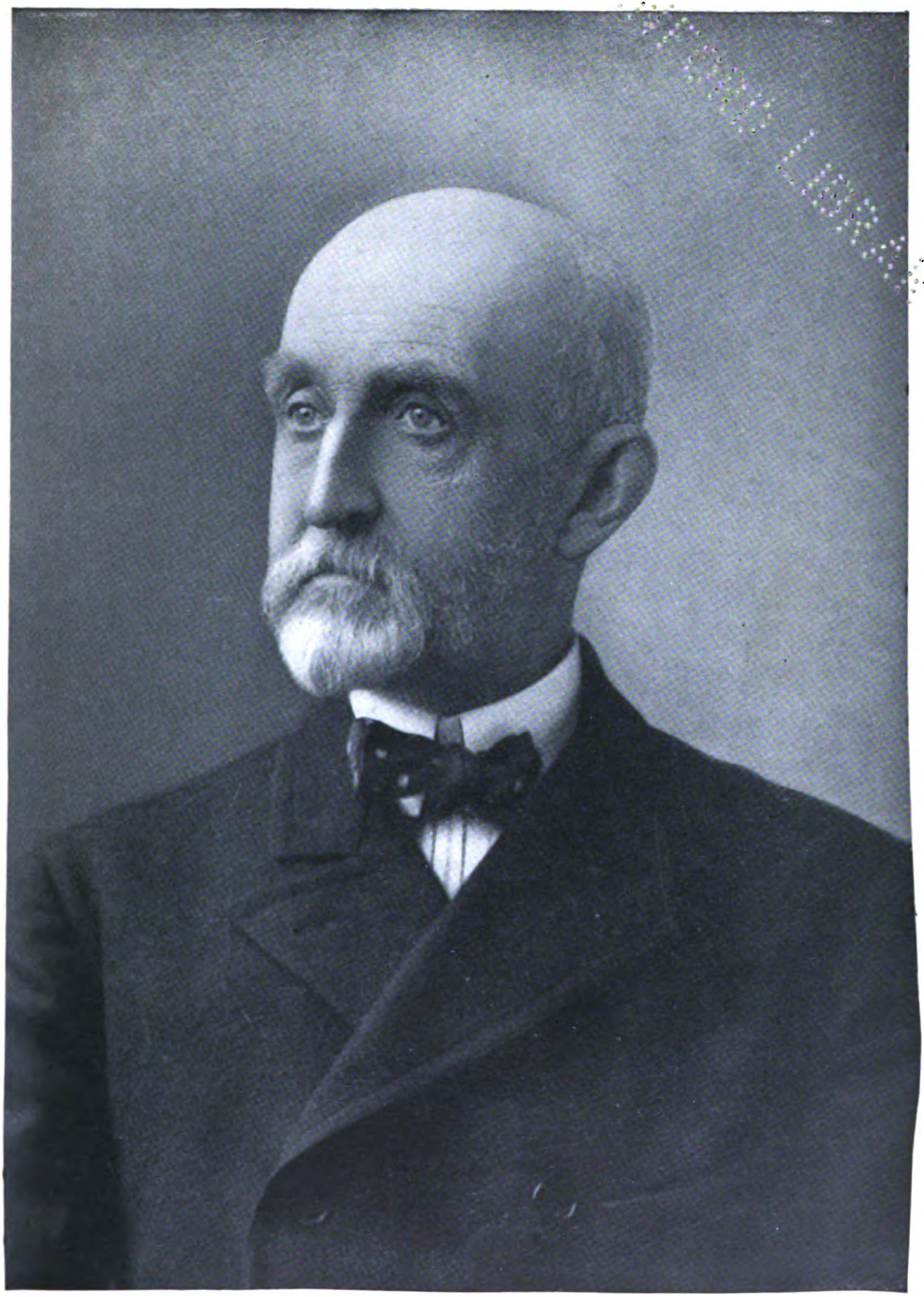
The import of cotton textiles was valued at 22,768,330 francs in 1912; metal manufactures, 4,759,193; metals, 1,703,119; wines, 1,950,643; spirits, 995,391; iron manufactures, 1,863,953; coal, 92,852; etc. The export of raw hides in 1912 was valued at 10,752,572 francs; raw gold, 5,989,175; rubber, 5,181,431; vanilla, 3,941,521; raffia, 3,787,936; legumes, 2,807,575; wax, 1,696,760; cattle, 1,008,685; ebony, 425,000, etc. There entered at the ports in 1912 trade 10,937 vessels, of 1,736,764 tons. The chief ports are Tamatave (7026 inhabitants), Majunga (4600), and Diégo-Suarez. Fianarantsoa has about 7000 inhabitants. The budget for 1911 balanced at 31,153,000 francs; the debt stood, Jan. 1, 1912, at 98,220,000 francs.

Towards the end of 1914 the Antananarivo railway, that was being constructed between Antananarivo and Antsirabe, a distance of 107 miles, showed considerable progress. There was also under construction a branch line between Antananarivo and Tamatave, 81 miles north from Moramanga, which is 133 miles from Tamatave, to Lake Abevava in the Ambatondrazaka district, which is a fertile country in the west of the province of Tamatave. These two extensions are intended to develop the commerce of the Central Plateau and the Ambatondrazaka country. There are 7192 kilometers of telegraph lines, with 12,297 of wire; telephone lines, 1381 kilometers. Post offices, 171.

For purposes of administration the colony of Madagascar is divided into 21 provinces, the commune of Sainte-Marie, and the autonomous districts of Ankazobe and Ambilobe. By the decree of March 31, 1914, the Comoro Archipelago was converted into a province of Madagascar. The Governor-General in 1914 was A. Picquié.

MAGRUDER, GEORGE LLOYD. An American physician, died Jan. 28, 1914. He was born in Washington, D. C., in 1848; graduated from Gonzaga College in 1868; studied medicine at Georgetown University, and received his degree in 1870. From 1870 to 1873 he was professor of chemistry at Gonzaga College, and at the same time acted as prosector to the professor of anatomy at Georgetown University. He was for a number of years professor of materia medica and therapeutics, and dean of the School of Medicine at the same university. For over ten years he was a member of the board of visitors at the University Hospital for the Insane; was consulting physician to several important hospitals, and a member of several political societies.

MAHAN, ALFRED THAYER. An American naval officer, an authority on sea power, died Dec. 1, 1914. He was born at West Point, N. Y., in 1840, and graduated from the United States Naval Academy in 1859. He served on the



ALFRED THAYER MAHAN
REAR ADMIRAL, UNITED STATES NAVY
DIED DECEMBER 1, 1914

Congress for two years, and at the outbreak of the Civil War was commissioned lieutenant. Being appointed to the *Pocahontas*, he took part in the blockading of the Confederate ports on the Atlantic, afterwards serving on the *Seminole* and the *James Asgar*. At the conclusion of the war he was made a lieutenant-commander; in 1872 a commander. Until 1885 he served on the Atlantic and Pacific stations on various vessels, and in the latter year was appointed captain and assigned to the Naval War College. In the following year he was appointed president of that college, continuing until 1889, and again served as president in 1892–93. From 1893 to 1895 he was in command of the *Chicago*, and it was at that time that he obtained the first worldwide recognition of his fame as a writer on naval affairs. His first book, called *The Gulf and Inland Waters*, published in 1883, achieved a moderate success among readers of naval works, and encouraged by this he began work on another and more ambitious work which he called *Influence of Sea Power upon History, 1660–1783;* this, published in 1890, was given instant recognition. It was held in high regard, especially in England, where it was looked upon as epoch making, and studied by cabinet officers and members of the Admiralty, as well as by general readers. He visited England on the *Chicago* and was given the degrees of D.C.L. by Oxford and LL.D. by Cambridge University. On his return to the United States he was given honorary degrees by Yale, Harvard, Columbia, and McGill Universities. He again resumed his position at the War College, but soon found that he could not do his literary work while engaging in active service; and in 1896 was retired, at his own request, after 41 years' service. In 1906 he was advanced to the rank of rear admiral on the retired list. His second great book was published in 1892, and was entitled *Influence of Sea Power upon the French Revolution and Empire*. This was followed by *Life of Admiral Farragut* (1892); *Life of Nelson* (2 vols., 1897). The latter is regarded as one of the most comprehensive and discriminating biographies of Nelson, and was most cordially received in England. During the Spanish-American War Admiral Mahan was ordered to active duty on the Naval War Board, and in 1899 was a delegate to The Hague Peace Conference. In 1899 he published *Lessons of the War with Spain*. Previous to the breaking out of the war he had published *The Interest of the United States in Sea Power, Present and Future*, which, as a criticism of the American navy, was his most important book from the standpoint of the United States. Admiral Mahan was a consistent advocate of a larger navy, and he many times pointed out the importance to Great Britain of maintaining a preponderating superiority over the German fleet. His writings, the most important of which were for the purpose of showing the influence of naval affairs in the struggle of nations, were all dominated by the theme of the necessity of nations being prepared for war. In spite of this fact he was by no means a militarist, in the sense that he demanded at any time measures of aggression. Undoubtedly the foremost authority on naval history, his writings, in addition to the works already mentioned, include: *The Problem of Asia* (1900); *The South African War* (1900); *Types of Naval Officers* (1901); *Retrospect and Prospect* (1902); *Sea Power in its Relations to the War of 1812* (1905); *From Sail to Steam* (1907); *Some Neglected Aspects of War* (1907); *Naval Administration and Warfare* (1908); *The Harvest Within* (1909); *Interest of America in International Conditions* (1910); *Armaments and Arbitration* (1912); and *Major Operations of the Navies in the War of American Independence* (1913). He was also a frequent contributor on naval subjects to newspapers and periodicals.

MAIL. See UNITED STATES, *Post Office.*

MAINE. POPULATION. The estimated population on July 1, 1914, was 762,787. The population in 1910 was 742,371.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	16,000	736,000	$ 648,000
	1913	16,000	608,000	529,000
Wheat	1914	3,000	81,000	88,000
	1913	3,000	76,000	77,000
Oats	1914	141,000	5,781,000	3,295,000
	1913	140,000	5,600,000	3,080,000
Barley	1914	5,000	150,000	122,000
	1913	5,000	140,000	112,000
Potatoes	..1914	180,000	33,800,000	11,154,000
	1913	128,000	28,160,000	14,925,000
Hay	1914	1,280,000	[a] 1,414,000	18,523,000
	1913	1,194,000	1,194,000	16,597,000

[a] Tons.

MINERAL PRODUCTION. The principal mineral product of the State is granite, in which Maine ranked third, being exceeded only by Vermont and Massachusetts. More than half the granite quarried is used in buildings and monuments, but considerable quantities are made into paving blocks and curbing. The total value of the stone production in 1913 was $1,792,079, against $1,810,590 in 1912. Maine is also one of the leading States in the production of slate, the output of which in 1913 was valued at $323,998. In the value of feldspar produced Maine ranks first. The production in 1913 was 38,248 short tons, valued at $348,499. Other commercial minerals produced in 1913 were mineral waters, sand and gravel, and a small quantity of gem material. The total value of the mineral production in 1913 was $4,429,584, compared with $3,925,526 in 1912.

EDUCATION. The total school population of the State in 1914 was 221,271. The total enrollment in the public schools was 146,620, and the average daily attendance was 113,056. The male teachers numbered 743 and the females 6328. The average yearly salary of male teachers in the common schools was $459.67 and of female teachers $356.52. In the high schools the average yearly salary of male teachers was $971.68, and of female teachers $561.18.

TRANSPORTATION. The total railway mileage in the State in 1914 was 2300. The railroads having the longest mileage were the Maine Central, 995; Bangor and Aroostook, 630; Canadian Pacific, 177; Boston and Maine, 139; and the Sandy River and Rangeley Lakes Railroad, 105. The total mileage of electric railways was 491. The only railroad construction during the year was that of the Portland and Interurban Railroad running from Lewiston to Portland, a distance of approximately 29 miles.

Finance. The total receipts for the fiscal year 1913 amounted to $5,081,853 and the expenditures were $4,889,678. There was at the beginning of the fiscal year a balance of $457,128 and at the end a balance of $649,303. The total bonded indebtedness of the State on Dec. 31, 1913, was $569,000.

Charities and Corrections. A State board of charities and corrections was created by the Legislature of 1913 and its first report was made in 1914. The board has supervision over the State institutions and over municipal alms houses, town farms, hospitals, institutions for child-saving, etc. It also has general supervision of the correctional institutions. The charitable institutions include the State Hospitals at Augusta and Bangor, the Maine School for Feeble Minded, and the Bath Military and Naval Asylum at Bath. The correctional institutions include the Maine Industrial School for Girls at Hallowell, the State School for Boys at South Portland, and the Maine State Prison at Thomaston. The total expenditures for the support of these institutions is over $1,000,000 annually. In the correctional institutions of the State, there were in 1913 an average of 1226 persons.

Politics and Government. The State Legislature did not meet in 1914 as the sessions are biennial and the last was held in 1913. Elections were held for State officers and four representatives in Congress. The Republicans renominated for Governor William T. Haines, the Democrats Oakley C. Curtis, mayor of Portland, and the Progressives Halbert P. Gardner. Elections in Maine for State officers and members of Congress are held in September instead of in November as in other States, and the results usually indicate the general trend in politics. The Republican party, nominally the predominating party in the State, had been divided in 1912 by the formation of the Progressive party. Although the Progressive strength fell off greatly from 1912 it was sufficient to defeat Governor Haines, the Republican candidate. Oakley C. Curtis was elected Governor with 62,039 votes, compared with 58,862 for Governor Haines and 18,225 for Gardner, the Progressive candidate. The total vote cast in this election was 141,592, compared with 141,940 in the September election, and 129,637 in the presidential election, of 1912. Thus, as is usually the case in Maine, a larger vote was cast in this election than in the preceding presidential election. The Republican vote was more than twice as great as in the presidential election of 1912, when it was 26,545. The Democratic vote showed an increase of about 10,000 from 1912, while the Progressive vote fell off about 30,000 from the vote for Roosevelt. The Republicans elected representatives in the first, third, and fourth districts, while the Democrats reëlected D. J. McGillicuddy in the second district. In the September election, the vote in referendum established the Public Utilities Commission, which had been authorized by act of the Legislature of 1913.

State Government. Governor, Oakley C. Curtis; Secretary of State, J. E. Alexander; Treasurer, Joseph W. Simpson; Adjutant-General, Albert Greenlaw; Auditor, J. E. Sullivan; Attorney-General, Scott Wilson; Superintendent of Public Schools, Payson Smith; Insurance Commissioner, J. Wallace Blunt; Commissioner of Agriculture, John A. Roberts; Commissioner of Public Lands, Blaine S. Viles—all Republicans except Governor and Auditor, who are Democrats. January 4, 1915, new election for Secretary of State, Treasurer, Attorney-General, and Commissioner of Agriculture.

Judiciary. Supreme Judicial Court: Chief Justice, Albert R. Savage, Republican; Associate Justices, L. C. Cornish, Republican; Albert M. Spear, G. E. Bird, Democrats; A. W. King, Republican; Geo. F. Haley, Democrat; and Geo. M. Hanson, Democrat; Warren C. Philbrook, Clerk.

State Legislature, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	14	77	91
Republicans	17	70	87
Progressives		4	4
Majority	Rep. 3	Dem. 3	

The representatives in Congress will be found in the section *Congress*, article United States.

MAINE, University of. A State institution of higher education, founded at Orono, Me., in 1865. The university consists of the College of Agriculture, the College of Arts and Sciences, the College of Law, the College of Technology, and the Agricultural Experiment Station. In the College of Agriculture there were in 1914, 36 members of the faculty, in the College of Arts and Sciences, 47, in the College of Law, 11, in the College of Technology, 32, and in the Agricultural Experiment Station, 15, making a total of 150 members of the faculty. The total enrollment in all departments was 1196. The only gift of note during the year was the completion of the payment for the College of Law building by D. D. Stewart. The university has an endowment of a little more than $200,000, and is supported chiefly by Federal and State appropriations. The library contains about 50,000 volumes. The president is Robert J. Aley, LL.D.

MALACCA. One of the Straits Settlements (q.v.).

MALARIA. A new malarial parasite in man was discovered by Dr. J. W. Stephens, of the University of Liverpool. The organism was first noticed in a blood slide from a native child of Central India. The new parasite, to which the name *Plasmodium tenue* has been given, is an extremely active ameba and the arrangement of the processes gives the parasite most irregular fantastic shapes. The cytoplasm is very scanty and the nuclear chromatin is disproportionately great.

Dr. Samuel Dixon, Commissioner of Health of Pennsylvania, called attention to the value of the duck as an enemy of the mosquito. After trying fish as destroyers of larvæ and pupæ of mosquitoes with indifferent success, Dixon built two dams near together on the same stream, so that each would have the same environment for the breeding of mosquitoes. Each body of water was about 1400 square feet in extent. In one pond, 20 mallard ducks, *Anas platyrhynchos*, were permitted to feed, while the other was entirely protected from water birds, but well stocked with American goldfish. The pond in which the ducks fed was entirely free from mosquitoes for several months, while that stocked with fish was always swarming with mosquitoes in various stages of development. Dixon then placed 10 well-fed ducks in the infested pond, and they soon turned their attention to the larvæ and pupæ of the mosquito, devouring them greedily in preference to any other food. At the end of 24 hours all pupæ had disappeared, and after 48 hours only a few larvæ survived. Dixon believes that while other birds, fish, spiders, and frogs and small reptiles are all enemies of the mosquito, none of them have the wide geographical range and the capacity to devour such large numbers of immature mosquitoes as the ducks. Both the mallard and spoonbilled duck can be employed for this purpose.

MALAY STATES. See Federated Malay States.

MALTA. An island in the Mediterranean, covering 91½ square miles and constituting, with the islands of Gozo (25⅘), Comino (1), Filfla, and Cominotto (mere islets), a British crown colony. The total population April 1, 1913, was estimated at 216,617; census of 1911, 211,564; census of 1901, 184,742. The natives are of Punic origin, and their speech is said to be derived from the Carthaginian and Arabic languages. The majority of the population are Roman Catholics. Education is not compulsory. The soil is under high cultivation, and besides products for home consumption potatoes, onions, oranges, etc., are exported. The chief town and capital is Valletta, with a population, April 2, 1911 (including the suburbs of Floriana, Sliema, St. Julian's), of 44,143 inhabitants. Citta Vecchia, the ancient capital, had with suburbs 8896 inhabitants. The Three Cities (Senglea, Cospicua, and Vittoriosa) have a population of 26,551.

Malta is a port of call for Mediterranean traffic, and an important coaling station. Valletta is the centre of a large transit trade. There are 7¾ miles of railway. Imports 1912–13, £2,614,566; exports £977,656. Total weight of goods transshipped, 13,464 tons. Revenue 1912–13, £442,035; expenditure, £427,581. Tonnage entered and cleared 10,398,948, of which 5,510,556 tons British. There is, strictly speaking, no public debt; there is no direct taxation. The Governor in 1914 was Gen. Sir H. M. L. Rundle, appointed 1909.

MAMMALS. See Zoölogy.

MAN, Antiquity of. See Anthropology; Geology.

MANCHURIA. A Chinese dependency, lying east of Mongolia and Chihli and between Korea and the Amur River, which separates it on the north from Siberia. The capital is Mukden.

Manchuria consists of three provinces, the total estimated area of which is 362,483 square miles. There exist widely varying estimates of population. The figure derived from the 1910 enumeration of households is 12,742,360. This does not include children under six years of age; including such children, the estimate is 13,104,000. The population is doubtless increasing at a rather rapid rate; from China proper there is a considerable immigration, attracted by Manchuria's exceptionally fertile soil and the rapid development of the very profitable soya bean culture. The three provinces of Manchuria, with area and total estimated population in 1910, are: Heilungkiang, in the north, 202,703 square miles, 1,607,000 inhabitants; Kirin, 105,019 square miles, 5,501,000 inhabitants; Shengking, in the south, 54,761 square miles, 5,996,000 inhabitants. The capital of Heilungkiang is Tsitsihar, with an estimated population of 30,000; the capital of Kirin province is Kirin, whose population is variously stated, some estimates being as high as 100,000; capital of Shengking, Mukden, whose population has been estimated at 158,000. Other important towns are Antung, Kwangchengtze (Changchun), Harbin, Newchwang (Yingtze), at the mouth of the Liao River, and Newchwang City, 30 miles up the Liao.

In the southern part of Shengking is the Japanese leasehold of Kwantung (q.v.). From Kwantung the Japanese "sphere of influence" extends northward to Kwangchengtze. Here the Russian "sphere" begins and the Russian railway running south from Harbin connects with the Japanese railway from Mukden, Dairen, and Ryojun. Mukden is connected with China proper by a branch of the Chinese Imperial Railways, and with Antung by a Japanese line, which connects with the Korean railways. The Russian line to Vladivostok crosses Heilungkiang and Kirin provinces, passing through Harbin. The total length of railway in Manchuria at the beginning of 1912 has been reported at 2182 miles. The South Manchuria Railway maintained shops at Shahokou, which in 1914 were engaged in the building of locomotives for the company's lines, and were also considering the construction of locomotives for the Korean railways.

Important products of Manchuria are soy beans, millet, corn, Kafir corn, wheat, rice, and tobacco. There are valuable mineral resources, and some iron and coal are worked. The reports of foreign trade, including those of Kwantung, are included in the reports of the foreign commerce of China.

MANITOBA. A province of the Dominion of Canada. Area, 73,732 square miles with a population (1911) of 455,614. Area, including that portion of the Northwest Territories annexed to Manitoba in 1912, 251,832 square miles, carrying a population of 461,630. The capital is Winnipeg, with (1911) 136,035 inhabitants. The province is administered by a Lieutenant-Governor appointed by the Governor-General of Canada and acting through a responsible council. There is a unicameral legislative assembly of 41 members elected for four years. The Lieutenant-Governor in 1914 was Sir Douglas Colin Cameron, appointed Aug. 1, 1911. Premier in 1914, Sir R. P. Roblin. In the 1914 elections for the Manitoba Legislative Assembly, the Roblin government (Conservative) was returned with a narrow majority. See also the article on Canada.

MANUFACTURES. See United States, the various States of the United States, and other countries, under section so entitled.

MARINE DISASTERS. See Safety at Sea.

MARITAL CONDITION AND MORTALITY. See Marriage and Divorce; and Vital Statistics.

MARKS, William Dennis. An American engineer and writer, died Jan. 7, 1914. He was born at St. Louis in 1849 and took engineering studies at Yale, from which he received the degrees of Ph.D., 1870, and C.E. in 1871. Until 1873 he was engaged in practicing engineering on various railways, gas works, and iron works, etc. In 1876 he became instructor in mechanical engineering at Lehigh University, and in the following year was appointed Whitney professor of dynamic engineering at the University of Pennsylvania. In 1887 he became engineer and president of the Edison Electric Light Company of Philadelphia. He was the author of: *The Relative Proportions of the Steam Engine* (1880); *The Finances of Gas and Electricity Manufacturing Enterprises,* and many scientific reports and papers; and was also consulting engineer to many cities, including New York, Buffalo, Worcester, Minneapolis, Cleveland, and Chicago.

MARNE, BATTLE OF THE. See WAR OF THE NATIONS.

MARRIAGE AND DIVORCE. There was less public discussion of problems connected with marriage during 1914 than in the preceding year due doubtless to the absence of any important public report or action by any important public body. Discussion regarding the relation of marriage to length of life continued and considerable interest attached to the eugenics legislation of the preceding year. There was also evidence that the great volume of marital disputes which are brought before the courts was resulting in the creation of special judicial machinery for handling domestic troubles.

MATRIMONY AND DEATH RATE. Discussion of the relation of marriage to longevity was continued by statistics collected at Chicago showing that the death rate of bachelors was 30 per cent higher than that of married men and the death rate of maids was 40 per cent higher than that of married women. A writer in *American Medicine* attributed this difference not to the effects of marriage, but rather to selection for marriage. While inclined to attribute some slight effect to the more regular habits following marriage, an influence certainly less important in the case of women than men, the writer held that the principal factor was the selection of the stronger and more healthful for marriage mates. The physically weak or defective would therefore be found in larger proportion outside the married state than within. This interpretation had in fact been advanced some decades earlier by statistical writers.

DOMESTIC RELATIONS COURT. The first Court of Domestic Relations was established in Chicago in 1911 by the judges of the Municipal Court. Its establishment was due to the fact that cases involving domestic tangles were numerous, were different in nature from cases involving criminality, and hence made objectionable the mingling together of men and women seeking a solution of domestic troubles with common drunkards, rogues, street women, and other court habitués. There was a strong conviction that much domestic unhappiness and many failures to achieve success in the great adventure of marriage might be avoided by the wisdom of a trusted confessional and the authority of a respected public official. In the Chicago Court a woman with the title of social secretary was chosen as confessor. In the first year 2796 cases were disposed of. In only 61 of these were women defendants. In the second year 3699 cases were disposed of. In 2462, or two-thirds of these, no warrants were issued. In over 2000 nonsupport cases the husbands were brought into court; and deserting husbands were frequently followed up. The court has aided complainants in many ways, always with splendid insight into human relations and with a view to the restoration of right conditions rather than punishment. Work is found for husbands accused of nonsupport. In the second year $75,000 was paid by such men to the court and an equal amount directly to wives. The coöperation of outside agencies, such as settlements, district nurses, churches, and children's aid societies is secured. Experience has shown that liquor is the most frequent cause of separation. The second year's statistics showed that of every 100 separations 46 were due to drink; 12 to immorality of husbands; 2 to immorality of wives; 12 to venereal diseases of husbands; 8 to ill temper of husbands; 3 to ill temper of wives; 7 to interference of mothers- or fathers-in-law; 4 to youth; 3 to laziness of husbands; and 1 to sickness. The judges had become thoroughly convinced of the righteousness of divorce in various cases. Many cases of illegitimacy are also handled by the court; in the second year there were 499 bastardy cases, in about one-third of which the girl admitted that she was a delinquent.

The Ohio Legislature, acceding to the demand of Cincinnati social agencies, created a Court of Domestic Relations for Hamilton County as a branch of the Court of Common Pleas. It has its own judges elected on a nonpartisan ballot. It hears divorce cases and most nonsupport and failure-to-provide cases. Uncontested divorce cases are now investigated by probation officers, thus restricting the abuses due to agencies securing a divorce for a fee. Moreover the disregard of court orders in nonsupport cases is checked by special court officials.

EUGENIC MARRIAGES. A movement for eugenic marriage laws followed the recent awakening of general interest in venereal infection and demand for better safeguards against racial deterioration. The most advanced law was enacted in Wisconsin in 1913, effective January 1. This law required that any man seeking a marriage license must obtain a physician's certificate showing freedom of the blood from venereal germs. It fixed the physician's maximum fee at $3. On account of the form of the certificate the physicians of Milwaukee held that a true statement could be made only after expensive laboratory tests for venereal infection. They were thus confronted with the alternatives of falsifying the certificates or of suffering financial loss, and consequently went on strike. The situation was eased slightly by an opinion of the Attorney-General that the law was intended to require only those methods of examination known to reputable physicians generally. The law, however, was brought before the courts in several cases and on January 20 the Circuit Court of Milwaukee declared it unconstitutional on the ground that it was unreasonable as regards the physician's fee and in the limitation of the right of matrimony. The court refused assent to the charge that the law was class legislation. Meanwhile a decision of the State Supreme Court holding that neither license nor certificate was necessary for marriage, but only a mutual agreement of two persons to accept each other as mates, was made the basis of a public announcement by a county register of deeds that he would record common-law agreements for 10 cents each. The law finally reached the Supreme Court of the State, which reversed the Circuit Court decision on June 17. The chief argument against it, that it was discriminatory in signaling out the male sex, was dismissed by the court on the ground that such a classification was permissible. The court held that the law intended to require only such examination as an ordinary physician could make.

Eugenic marriages were enforced by numerous ministers throughout the country, the movement being led by Dean Sumner of Chicago. After a year's experience with rules requiring sanitary marriages he approved them. He required that parties seeking to be married should be baptized; should neither of them have a divorced wife or husband living; must establish their identity by witnesses; must arrange for the ceremony at least three days in advance; and must each present a certificate signed by a reputable physician that he or she has no incurable or communicable disease and is mentally sound. Instead of decreasing the number of applicants these requirements increased them. Many other ministers of various denominations adopted similar rules. Jewish rabbis pointed out that the sanitary marriage had long been a practice in Jewry. At the Central Conference of American Rabbis in July a committee was appointed to harmonize the civil and Mosaic laws in regard to marriage and divorce. Cardinal Gibbons found the movement to be in harmony with the ideals of the Catholic Church.

MARTIN, Frederick Townsend. An American financier and writer, died March 8, 1914. He was born in Albany, N. Y., in 1849; educated at the Albany Boys' Academy, and studied law at the Academy Law School, receiving the degree of LL.B. in 1872. His parents possessed great wealth, and he, with his brother Howard Martin, became well-known for their entertainments in New York City. Mr. Martin also took an active part in the militia of the State and became judge and advocate with the rank of colonel. About ten years before his death he became interested in social work, and from that time devoted much attention to educating and instructing the poor, also lecturing on subjects connected with social questions. He wrote many articles for newspapers, dealing with social uplift work, and his first book, *The Passing of the Idle Rich*, in which he preached on the evils to society of idleness and extravagance, was published in 1911, and was followed by: *My Personal Experiences of Meeting Snobs*, in the same year; *Reminiscences of My Life* (1912); and *Things I Remember* (1913).

MARTINIQUE. A French colony; an island of the Lesser Antilles. Its area is 987 square kilometers (381 square miles), and its population in 1911, 184,084. Fort-de-France, with about 27,000 inhabitants, is the capital. Imports, 1912, 21,520,301 francs; exports, 30,523,455 francs. Vessels entered in the 1911 trade, 88, of 155,570 tons. The debt stood Jan. 1, 1912, at 4,510,876 francs. The Governor in 1915 was G. Poulet.

MARYLAND. Population. The estimated population on July 1, 1914, was 1,341,075. The population in 1910 was 1,295,346.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	663,000	24,581,000	$16,681,000
	1913	670,000	22,110,000	14,372,000
Wheat	1914	612,000	13,158,000	13,947,000
	1913	610,000	8,113,000	7,221,000
Oats	1914	43,000	1,161,000	604,000
	1913	45,000	1,260,000	605,000
Rye	1914	25,000	425,000	366,000
	1913	27,000	389,000	296,000
Barley	1914	5,000	165,000	109,000
	1913	5,000	145,000	93,000
Potatoes	...1914	44,000	3,432,000	2,059,000
	1913	43,000	3,741,000	2,506,000
Hay	1914	390,000	*a* 448,000	6,854,000
	1913	390,000	491,000	7,463,000
Tobacco	...1914	22,000	*b* 17,600,000	1,408,000
	1913	25,000	18,500,000	1,720,000

a Tons.
b Pounds.

Mineral Production. The mineral production of Maryland in 1913 was valued at $11,292,723, compared with $10,851,671 in 1912. The value of the coal mined constituted more than half the total. The total production of coal was 4,779,839 short tons, valued at $5,927,046. This was less than the amount mined in 1912 by 184,199 short tons, but the value showed a gain of $87,967 and exceeded that of any other year since 1907. In 1913, 5645 men were employed in the coal mines of the State. There were practically no labor troubles. The coal production of the State in 1914, according to the estimates of the United States Geological Survey, showed a decrease of about 500,000 tons. This was due chiefly to the approaching exhaustion of the Big Vein, which has supplied more than 95 per cent of the total coal produced in the State. Second in importance among the mining industries is clay-working. The clays of the State are widely distributed and suitable for a variety of uses. The total value of the clay products in 1913 was $1,917,500. The third industry in importance is stone quarrying. The value of the output in 1913 was $1,153,115, compared with $1,032,022 in 1912. Other commercial products are sand, gravel, cement, feldspar, infusorial earth, mineral paints, mineral waters, sand-lime brick, silver, talc, and soapstone.

Education. The total school population of the State on July 31, 1913, was 415,908. Of these, 163,827 were in the city of Baltimore. The average number of pupils in the public schools in that year was 155,007. The total number of teachers was 5805, of whom 4899 were females and 906 males. The average yearly salary of teachers was $533.17. There were in the State in that year 540 schools for colored persons, with 905 teachers and 43,757 pupils. The total value of school property in the State in 1913 was $10,672,069. The total expenditures for school purposes was $5,326,876.

Finance. The total receipts from all sources for the fiscal year ending Sept. 30, 1914, was $12,600,566. The total disbursements amounted to $12,999,561. At the beginning of the fiscal year there was on hand a balance of $1,475,956 and at the end of $1,840,256. The bonded debt of the State at the end of the fiscal year amounted to $19,685,880, to offset which there were sinking funds amounting to $5,966,304.

Transportation. The railroad mileage in the State in 1914 was 1347. The principal railroads are the Pennsylvania, with a mileage of 418; the Baltimore and Ohio, with a mileage of 318; the Western Maryland, with 252; and the

Baltimore, Chesapeake, and Atlantic, with 131. The Baltimore and Ohio and the Western Maryland carried on considerable construction work during the year.

CHARITIES AND CORRECTIONS. The State institutions are the Maryland Hospital for the Insane, the Springfield State Hospital, the Maryland Asylum and Training School for Feebleminded, the Maryland School for the Deaf and Dumb, and the Maryland Tuberculosis Sanatorium. There are also many hospitals and asylums, carried on under local and private auspices. The State institutions are under the direct control of the Board of State Aid and Charities.

POLITICS AND GOVERNMENT. The General Assembly or Legislature of Maryland met in 1914 as the sessions are biennial and the last was held in 1912. Many important measures were passed, among them the following: a measure to continue the system of good roads throughout the State and an appropriation of $6,600,000 additional for the completion of the system that will connect all the county towns with each other and with the city of Baltimore; creation of a State Tax Commission to supervise and equalize the assessment of property and taxation; the granting of extraordinary powers to the State Board of Health and making a large appropriation to its use; the creation of an Advisory Board of Pardons and Parole, embodied in a so-called Penal Reform Act; a workmen's compensation act of very liberal terms, creating a commission to administer the law and making compensation for injuries or death compulsory; an amendment to the Haman Oyster Planting law, which was demanded by the oystermen who are opposed to oyster culture; an act providing for the nomination of candidates for the United States Senate upon what is called the "County Unit plan." Acts submitting four amendments to the constitution of the State were submitted to the voters as follows: an amendment which will give each county of the State the power to form a local legislative body to enact local laws and abridging the power of the General Assembly to enact such laws; an amendment adopting the referendum system for laws passed by the Legislature upon the presentation of a specified petition, and suspending the operation of laws upon which a referendum has been asked; an amendment giving the General Assembly power to enact laws for the suspension of sentence by a court in criminal cases, for indeterminate sentence and for the release of prisoners on parole. These four amendments will be voted on at the general election in November, 1915. An amendment relating to the term and compensation of the sheriff of the city of Baltimore was submitted and ratified at the election in November, 1914.

The term of the Governor is four years and that of the present Governor, Phillips Lee Goldsborough, will not expire until January, 1916. At the November election no State officials were elected, but elections were held for United States Senator and for representatives in Congress. The candidates for the Senate were John Walter Smith, Democrat, for reëlection, Edward C. Carrington, Republican, and V. M. Reichard, Progressive. At the elections held on November 3 the Progressive party, which at the presidential election in 1912 had polled 57,786 votes, 3000 more than the Republican vote, almost disappeared, the candidate for that party for the Senate receiving only 3697 votes. Senator Smith, Democrat, received 110,204; Carrington, Republican, 94,864. The Prohibitionists and Socialists also had candidates, but their vote was unimportant. The Democrats elected five candidates to the House of Representatives and the Republicans one. The Legislature defeated a woman's suffrage amendment to the constitution by a decisive majority.

In the closing weeks of the year 1914, during the deepest depression caused by the European War, an industrial survey of the city of Baltimore was made by experts employed by the Consolidated Gas Company in connection with the Merchants and Manufacturers Association and an advisory committee of the leading citizens. This showed that the value of manufactured products in the metropolitan district of Baltimore for the year in which the survey was made was $353,000,000, and that 115,000 persons were employed in the factories. In September, 1914, the one hundredth anniversary of the defeat of the British at North Point, Baltimore, and the writing of the National anthem, "The Star Spangled Banner," by Francis Scott Key, was celebrated in Baltimore by elaborate ceremonies. See CELEBRATIONS.

STATE GOVERNMENT. Governor, Phillips L. Goldsborough, Republican; Secretary of State, R. P. Graham, Republican; Treasurer, Murray Vandiver, Democrat; Adjutant-General, C. F. Macklin, Republican; Attorney-General, Edgar Allan Poe, Democrat; Superintendent of Education, M. B. Stephens, Democrat.

JUDICIARY. Court of Appeals: Chief Justice, Andrew H. Boyd; Associate Justices, N. Chas. Burke, William H. Thomas, John R. Pattison, Hammond Urner, John P. Briscoe, Henry Stockbridge, and Albert Constable; Clerk, Caleb C. Magruder—all Democrats except Stockbridge and Urner, Republicans.

STATE LEGISLATURE, 1913.

	Senate	*House*	*Joint Ballot*
Democrats	18	80	98
Republicans	9	22	31
Democratic majority	9	58	67

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

MARYLAND, UNIVERSITY OF. A State institution for higher education at Annapolis and Baltimore, Md., founded in 1784. There were in all departments in 1914, 1200 students, with 211 members in the faculty. There were no noteworthy gifts received during the year and no notable changes in the faculty. The productive funds amount to about $150,000 and the total income to about $250,000. The library contains about 25,000 volumes. The president is Thomas Fell, Ph.D., LL.D.

MASSACHUSETTS. POPULATION. The estimated population on July 1, 1914, was 3,605,522. The population in 1910 was 3,366,416.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	48,000	2,256,000	$1,918,000
	1913	48,000	1,944,000	1,652,000

		Acreage	*Prod. bu.*	*Value*
Oats	1914	9,000	338,000	186,000
	1913	9,000	315,000	170,000
Potatoes	1914	27,000	4,185,000	2,971,000
	1913	27,000	2,885,000	1,921,000
Hay	1914	480,000	*a* 684,000	13,681,000
	1913	475,000	575,000	12,182,000
Tobacco	1914	6,600	*b* 11,550,000	2,044,000
	1913	6,100	9,455,000	1,986,000

a Tons.
b Pounds.

Mineral Production. The principal mineral products of Massachusetts, as in most of the New England States, are from the stone quarries and clay pits. More than half the total value of the mineral production is from the stone quarries, exclusive of the limestone burned into lime. The clay-working industries furnish approximately 25 per cent of the total production. The total value of the mineral products in 1913 was $7,044,529, compared with a value of $6,654,514 in 1912. The stone quarried was valued at $4,096,372, compared with $3,663,279 in 1912. About 60 per cent of the stone was granite. The granite quarried in the State is used chiefly for building and monumental purposes and for paving blocks. The lime-burning industry is centred in Berkshire County. The State produces no kind of mineral fuel, although numerous deposits of peat exist in swamps and bogs in the eastern and central portions. The metal production is confined to a small output of iron ore which is used in local furnaces. Other mineral substances are emery, fuller's earth, occasional gems, mineral waters, sand and gravel, sand-lime brick, silica, and talc.

Transportation. The total mileage of main track in the State on June 30, 1914, was 2125. There were in addition 1081 miles of second, third, and fourth track, and 1720 miles of side track, making a total mileage of tracks of all kinds of 4927. This was an increase of about 35 miles from 1913. The railroads having the longest mileage are the New York, New Haven, and Hartford, 1833; Boston and Maine, 1967; and the Boston and Albany, 961. These roads formed practically one system, but provision was made in 1914 for the separation of the Boston and Maine Railroad from the New York, New Haven, and Hartford Company's roads. For an account of the details of this, see the article Railroads.

Education. The number of children in the State between 5 and 15 years of age on September 1, 1913, was 602,591. The average attendance of all the schools was 486,869. The female teachers numbered 15,604 and the male teachers 1863. The Legislature of 1914 passed several important measures relating to education. These included a resolution to provide for an investigation as to a more equitable method of supporting the public schools; an act to authorize the board of education to maintain classes for the training of teachers for State-aided, vocational, and continuation schools; an act relative to the right of women voters to vote for candidates for school committees; an act relative to annual returns of school statistics; an act amending the measures providing for the maintenance of public high schools; and an act providing for the maintenance of public evening schools and for regulating correspondence and other like schools.

Finance. The report of the State Treasurer shows a balance on hand on Dec. 1, 1913, of $8,220,590. The receipts for the year amounted to $43,241,099 and the disbursements to $43,386,668, leaving a balance on hand on Dec. 1, 1914, of $8,075,020. The direct funded debt on Dec. 1, 1914, amounted to $47,583,854 and the sinking funds for the same period to $19,323,948, leaving a net direct funded debt of $28,259,906. The net contingent funded debt on the same date was $56,441,695, making the total net direct and contingent debt on that date $84,701,602.

Charities and Corrections. Institutions under State supervision in 1914 were the State Infirmary at Tewksbury, the State Farm at Bridgewater, the Norfolk State Hospital, the Lyman School for Boys at Westborough, the Industrial School for Boys at Shirley, the State Industrial School for Girls at Lancaster, the Massachusetts Hospital School at Canton, the North Reading State Sanatorium, the Rutland State Sanatorium, the Lakeville State Sanatorium, and the Westfield State Sanatorium. Those who received care in these institutions in 1913 numbered about 20,000. The cost of maintenance was about $1,500,000 yearly. A Board of Prison Commissioners controls the prisons of the State. These institutions included the State Prison in Boston, the Massachusetts Reformatory at Concord, the Reformatory for Women at Sherborn, Prison Camp and Hospital at Rutland, and the State Farm at Bridgewater. The prison population at the end of 1913 was about 6000.

Politics and Government. The Legislature met in 1914 as the sessions are annual. The most important measure passed was one providing for the submission to the people of a constitutional amendment giving suffrage to women. An election to Congress was held in the twelfth district on April 7. James A. Gallivan, Democrat, was the successful candidate. Elections for State officers and representatives to Congress were held during the year. In the primary elections held on September 22 Governor Walsh was renominated by the Democrats, Samuel W. McCall, former representative in Congress, by the Republicans, and Joseph Walker by the Progressives. In the elections on November 3 Governor Walsh was reelected with 210,442 votes, compared with 198,627 for McCall, Republican, and 32,145 for Walker, Progressive. Although the Democratic vote showed a considerable falling off from 1912 and the Republican vote an even larger increase, the Democrats were able, with the assistance of the Progressives, to overcome the Republican vote. The total number of votes cast in the election was 459,203, compared with 488,056 in 1912. The Democratic vote showed a falling off of about 30,000; the Republican vote an increase of nearly 50,000; and the Progressive a falling off of over 110,000. The Republicans elected representatives in the first, second, third, fourth, fifth, sixth, eighth, eleventh, thirteenth, fifteenth, and sixteenth districts and the Democrats in the others. At the November State election the Republicans were all elected for the minor State offices, defeating the Democrats who had held the offices the previous year. On January 13 James M. Curley, Democratic Congressman from the twelfth district, was elected mayor of Boston, defeating Thomas L. Kenny, his only opponent, by a large majority.

Other Events. On July 29 the canal across Cape Cod was formally opened. This canal shortens by 70 miles the distance by water between New York and Boston and provides a safer route. (See CANALS.) On June 25 a fire in the city of Salem destroyed nearly half of that city. More than a thousand buildings were burned and 18,000 people were deprived of their homes. The loss was about $12,000,000; two and possibly three lives were lost. The conflagration began at 2 o'clock in the afternoon in a leather factory, and spread quickly, as the water pressure was inadequate and one of the mains was broken. Nearly all the historic structures of the town were saved. These include Hawthorne's birthplace, the customhouse where he worked, and the reputed House of the Seven Gables. Among the buildings destroyed were part of the hospital, the orphan asylum, and a new church.

STATE GOVERNMENT. Governor, David I. Walsh, Democrat; Lieutenant-Governor, Grafton D. Cushing, Republican; Secretary of State, Albert P. Langtry, Republican; Treasurer, Charles L. Burrill, Republican; Comptroller, ————; Auditor, Alonzo B. Cook, Republican; Adjutant-General, ————; Attorney-General, Henry C. Atwill, Republican; Secretary of the Board of Agriculture, Wilfrid Wheeler, Democrat; Commissioner of Insurance, Frank H. Hardison, Democrat; Commissioner of Education, David Snedden, Democrat.

JUDICIARY. Supreme Judicial Court for the Commonwealth: Chief Justice, Arthur Prentice Rugg; Justices, James M. Morton, John W. Hammond, Henry Newton Sheldon, William C. Loring, Henry K. Braley, and Charles Ambrose De Courcy; Clerk of the Court, C. H. Cooper—all Republicans.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	33	147	180
Democrats	7	88	95
Progressives	0	3	3
Socialists	0	1	1
Republican majority	26	55	81

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. An institution for technical education, founded in Boston in 1861. The students enrolled in all departments in the autumn of 1914 numbered 1811. The faculty, including professors, associate professors, and assistant professors, numbered 123. During the year Robert H. Richards, professor emeritus of mining engineering and metallurgy, Henry K. Burrison, assistant professor of mechanical drawing and descriptive geometry, and S. H. Woodbridge, associate professor of heating and ventilation, retired. John Knox Taylor, professor of architecture, Harold Pender, professor of electrical engineering, Lewis E. Moore, associate professor of structural engineering, and Charles A. Kraus, assistant professor of physico-chemical research, resigned. Charles L. Adams, professor of drawing and descriptive geometry, died. There were a number of important additions to the faculty during the year, including Ralph Adams Cram, professor of architecture. The institute received gifts amounting to $852,000 during the year. Its funds amounted at the end of the year 1913–14 to $2,963,809, and the income to $153,455. The library contains 100,000 volumes. Construction of new buildings for the institute at Cambridge progressed during the year. The president was Richard C. Maclaurin.

MATTEI, TITO. An Italian composer, educator, and pianist, died March 30, 1914. He was born at Campobasso, Italy, in 1841, and at the age of five years gave his first musical concert, touring Italy a little later, and at 11 years of age becoming a professor of the Santa Cecelia Academy in Rome, and a member of the Philharmonic Society and many other musical organizations. On his return from concert tours throughout France and England in 1853, he played before Pope Pius IX and received from him a gold medal. After many successful tours over the continent, he removed to London in 1863 and from that time until his death made his home in that city, where he organized and conducted a season of Italian opera at the Lyceum Theatre in 1870. He was best known in Italy as a writer of popular songs and his melodies were familiar to nearly every household in that country. He wrote several operas, many songs, and hundreds of pieces for the piano.

MAUCHERITE. See MINERALOGY.

MAURITANIA. A civil territory of the French West African government-general, governed from Saint-Louis (Senegal) by a commissioner. The chief towns are Port-Etienne, Boutilimit, Aleg, Altar, Moudjeria, etc. The Moors, who constitute a large proportion of the population, are all nomads, except for a few groups rendered semisedentary by the necessity for tending the plantations of palms from which they obtain a livelihood. They are all Mohammedans; but Islam has been strongly tinctured among them with Sufism. They live in encampments, driving their flocks from pasture to pasture as the water supply fails. Manual labor is considered dishonorable among the Moors. The negroes cultivate millet, barley, etc., gather gums, for export, and catch and dry fish. Salt exists in great abundance. Travel is by caravan, and distances are calculated by nights of travel. The exports are chiefly gums, salt, dates, ostrich feathers, and live animals. No trade statistics are available; the primitive method of barter obtains in the oases where commercial transactions are carried on. Lieutenant-Colonel Moret, who was appointed commissioner March 11, 1912, was obliged to carry on an intermittent warfare during 1913 and 1914 against pillaging nomad tribes. See FRENCH WEST AFRICA.

MAURITIUS. A supposedly volcanic island (720 square miles) in the Indian Ocean; a British crown colony. Total civil population (1911 census), 368,510; population inclusive of military, 370,393 (222,361 Indo-Mauritians, 35,526 other Indians, 3662 Chinese, 108,844 persons of European, African, or mixed blood). The natives of European race are in large part French creoles. Port Louis, the capital, had (1911) with suburbs, 50,060 inhabitants; Curepipe, 17,173; Mahébourg, 4068. The cultivation of sugar cane is the staple industry. There are seven lines of railway, all owned and worked by the government, and totaling 119.65 miles of standard gauge and 10 of narrow gauge. Imports 1912, Rs. 32,266,707 (Rs. 37,805,993 in 1911); exports, Rs. 37,184,189 (Rs. 41,204,854); revenue 1911–12, Rs. 10,435,648 (Rs. 11,129,988 in 1910–11); expenditure, Rs. 9,843,980 (Rs. 9,578,243). Total tonnage entered and cleared 1911–12, 773,092, of which 592,193 tons British. The Governor in

1914 was Sir J. R. Chancellor, appointed Nov. 13, 1911.

MAYO, John C. Calhoun. An American capitalist and politician, died May 11, 1914. He was born in Kentucky, and through the self-sacrifice of his parents who were very poor, he received a fairly good education; he afterwards taught school, and while still a young man engaged in the lumbering business in which he amassed a great fortune. Although he never held office he was one of the most powerful politicians in Kentucky. He left an estimated fortune of $12,000,000. He was for several years a member of the Democratic National Committee from Kentucky.

MAYOTTE AND THE COMORO ISLANDS. A group of islands belonging to France, administered under the government of Madagascar. Total area, 2168 square kilometers (837 square miles); population in 1911, 97,750. Total imports, 1911, 1,293,386 francs; exports, 4,842,359. The Administrator in 1915 was M. Cartron.

MEASLES. See Veterinary Medicine.

MEAT INSPECTION. See Stock Raising.

MEAT PRODUCTION. See Stock Raising.

MEDICAL PROGRESS in 1914. New and important discoveries were made in the domain of preventive medicine, and in the control of epidemic diseases during 1914. (See Diphtheria, Hookworm Disease, Occupational Diseases, Pellagra, Poliomyelitis [Infantile Spinal Paralysis], Public Health Service, Rabies, Typhoid Fever, Small-pox and Vaccination). Diseases peculiar to hot climates furnish an inexhaustible field for investigation, and many new facts were brought out and valuable data collected (see Beriberi, Insects and the Propagation of Disease, Leprosy, Malaria, Plague, Sleeping-Sickness, Tropical Diseases). The cause and cure of cancer still engaged the attention of scientists (see Cancer, Radiotherapy), and tuberculosis occupied no less important a place (see Tuberculosis, Tuberculin). Several new drugs were brought forward, among which may be mentioned Amphotropin, Cerolin, Cymarin, and Elarson. Some new departures in the administration of anesthesia were made (see Anesthesia, Twilight Sleep). Other medical items and statistics will be found under their respective captions.

MEDICAL SCHOOLS. See Universities and Colleges

MEEK, Seth Eugene. An American zoölogist, died July 7, 1914. He was born in Hicksville, Ohio, in 1859, and graduated from Indiana University in 1884, afterwards taking post-graduate studies at that university and at Cornell. In 1886–87 he was professor of natural science at Eureka College, and from 1887 to 1892 held the same position at Coe College. In the latter year he was appointed assistant professor of zoölogy and biology in the University of Arkansas which position he held until 1896, when he became assistant to the United States Fish Commission. From 1897 until the time of his death he was assistant curator of zoölogy in the Field Museum of Natural History in Chicago. He lectured on scientific subjects; explored streams of the Central and Western United States, Mexico, Guatemala, Nicaragua, Costa Rica, and Panama; and was a member of the Washington Academy of Sciences and other scientific societies. He was the author of *Fishes of Mexico North of the Isthmus of Tehuantepec* (1904), and many papers on fishes and reptiles in the publications of scientific bodies.

MERCURY. See Chemistry, Industrial; Quicksilver.

MERCURY BOILER. A novel process to utilize energy available in thermal ranges above those which can be conveniently utilized with steam, namely, making use of the thermal properties of mercury, was presented at a meeting of the Schenectady section of the American Institute of Electrical Engineers, Dec. 16, 1913, and during 1914 was widely discussed on account of its novelty. It involved the use of mercury in a temperature cycle above that used with steam for the production of commercial power, and consisted of a method whereby mercury is vaporized in a boiler by a furnace of ordinary type. From this boiler mercury vapor passes at a pressure near that of the atmosphere, to the nozzles of a turbine, which drives a generator or other utilizer, where it condenses on the dry surface of tubes containing water, and this water in turn vaporizes by the heat delivered, and the steam thus produced is used to drive other turbines, or as desired. As the mercury vapor is much hotter than steam, the gases normally leave the mercury boiler at a higher temperature than they would have in a steam boiler, and this excess heat is utilized by conveying, first, through a heater, which raises the returning liquid almost to the boiling point, and secondly, through a superheater which superheats the steam delivered through the condensing boiler, and third, through an economizer which heats the feed water for the condensing boiler, and so reduces the gases to the lowest practicable flue temperature. While mercury possesses many advantages as a thermodynamic fluid for this purpose, yet it has disadvantages, chief of which are its cost and the fact that it is poisonous, and there also are difficulties in confining both the vapor and the liquid. An experimental installation of this method was made, as well as a plan of commercial application, whereby in a single unit occupying the same floor space as a 500-horsepower steam boiler, the steam output alone of the condensing boiler would equal that obtained from the 500-horsepower boiler. It was claimed that with efficient oil firing of boilers, a fuel economy very near to that obtainable by the Diesel engine would be obtained, and the machine itself would be more simple, and free from the probability of detonations characteristic of the Diesel engine. So novel was the proposition, that it was extensively discussed, and while no installation on a commercial scale had been admitted, yet it was deemed worthy of further consideration. The proposed method was suggested by Charles Bradley, and was studied by W. L. R. Emmet in an elaborate investigation, which may be found described in vol. xxxii of the *Transactions of the American Institute of Electrical Engineers.*

MERIT SYSTEM. See Civil Service.

MERRIAM, George Spring. An American author and editor, died Jan. 22, 1914. He was born in Springfield, Mass., in 1843, and graduated from Yale College in 1864; from 1866 to 1868 he was tutor at Yale, at the same time studying theology; from 1870 to 1875 he was office editor of the *Christian Union*, and the remainder of his life was devoted chiefly to study and writing. He was the author of: *A Living Faith* (1876); *The Way of Life* (1881); *Life* *and Times of Samuel Bowles* (1885); *Noah Porter, a Memorial by Friends* (1893); *The Chief End of Man* (1897); *The Negro and the Nation* (1906); *The Man of To-day* (1911).

MERRITT, Edwin A., Jr. An American public official, died Dec. 4, 1914. He was born in Pierrepont, N. Y., in 1860, and graduated from Yale in 1884. He studied law, was admitted to the bar and at once engaged in active practice, but was also interested in manufacturing. His interest in politics began early in life, and in 1885 he was appointed deputy consul general at London. In 1902 he was elected to the New York State Assembly and served in that body continuously for eleven years. In 1908 he became the Republican leader of the assembly and served as such until 1912, when he was elected speaker of the assembly, which position he held up to the time of his election to Congress in 1912. He was afterwards reëlected to the Sixty-third Congress. During his service in the New York Legislature Mr. Merritt served on important committees, including the commission to inquire into the operations of the gas companies in New York City; he drafted the public service laws of New York State, and was identified with much legislation relating to railways.

MESOPOTAMIA, Archæology of. See Archæology.

MESOTHORIUM. See Radiotherapy.

METALLURGY. Metallurgical progress in 1914 did not involve any striking discoveries or innovations in practice. With mining and the metal markets in either a quiescent or a chaotic state as the result of financial depression or war conditions, there was little incentive to indulge in extensive exploitation of new processes, although naturally the larger companies endeavored to secure greater economy and improvement of plants. The following paragraphs, indicating some of the more important features of the metallurgical work of the year, are based in large part on authoritative reviews of progress published in the annual statistical progress numbers of the *Engineering and Mining Journal* (New York) and the *Iron Age* (New York).

Gold and Silver. In stamp milling no new developments of special interest were recorded during the year. Improvements in machinery were noted whereby heavy stamps run by electric motors, or otherwise, were installed, and a mill in North Carolina was built without stamps, the ore being first crushed and then rolled, the product being classified and then reground in a tube mill. The material was slimed, and the slimes cyanided, it being found that with the ore in use it was cheaper to install and operate rolls than to use stamps as preliminary crushing machines. Likewise, in Alaska a 6000-ton plant was about completed, but the preliminary working of the ore was done by jaw and gyratory crushers, the material then handled by rolls, and after being classified, sent to tube mills. This ore was to be concentrated, and probably the material would be sent to smelters. Certain improvements during the year were to be noted in cyanide practice. At Cobalt, Ontario, the Nipissing Mining Company was employing a new process for desulphurizing the rebellious silver minerals, which were treated in the low grade mill. Thus the high grade rebellious silver minerals were being treated directly by cyanide without concentration, amalgamation, roasting, or any other process, and this seemed to indicate that the cyanide process was capable of further extension. In the Porcupine District a separate treatment process was introduced at the Dome Mill, where instead of making a total slime product and treating it by agitation, the new work involved treating the sands and slime each in a separate installation, the former being leached, while the natural slimes are separately treated. A process known as counter-current decantation was tried successfully in a number of mills in place of the filter, and the principle was being considered in connection with hydrometallurgy of copper slimes. The flotation process was also being operated during the year, though on the part of many companies the work was but experimental. It was estimated that nearly one million tons of ore were treated in North America in 1914 by the flotation process, and upwards of 150,000 tons of concentrates were produced, an amount, however, far below that of Australia, where considerable tonnage of floated blend concentrate was produced.

Lead. The practice of lead and of silver-lead smelting and refining was discussed by the August meeting of the American Society of Mining Engineers, held at Salt Lake City, Utah, and a number of valuable papers were presented, showing innovations in all branches of lead metallurgy. It was found that the blast roasting of lead-bearing mixtures had increased so that the older modes of oxidation had been rendered almost obsolete, and there were two leading methods, the Huntington-Heberlein Pot, and the Dwight-Lloyd Straight Line Machine and Sintering Machine.

Copper. During the year a comprehensive work on modern copper metallurgy by Professor H. O. Hofman was published, which discussed modern methods in a field where constant developments have been in practice. The general tendency in the metallurgy of copper was a competition between flotation and leaching for the handling of concentration tailings. Leaching was having a thorough trial at a large number of mines. In the electrolytic treatment of copper, anodes of lead, carbon, and magnetite, with and without depolarizers, were being employed, and the difficulties encountered in soluble anodes were thought overcome. Concrete hearths were being used in the roasting furnaces of the Macdougal type, as they reduce the masonry repairs and permit easy removal of incrustations. This type of multi-deck furnace was found particularly favorable for the production of sulphur-dioxide gas from pyrites, and special blends of calcines from sulphur ores at smelting plants, and it was thought that it would be equally available for producing soluble oxides and sulphates, in leaching work, the muffle furnace, on account of the high fuel consumption, having not found as much favor as was at first anticipated. Various new types of furnaces of one kind or another were employed, and the rotary kiln at Chrome, N. J., was operating with considerable fuel economy. Fuel economy is an important consideration in many plants, and the Braden Copper Company was starting three kilns in Chile for work of this class. Coal dust firing was to replace the fuel oil firing in certain plants of reverbatory smelters, and this was an item to be considered in discussing the relative economy of blast and reverbatory furnaces. An interesting feature of the blast furnace operation of the year was some experiments at the Copper Queen Plant of Douglas, Ariz., on the possibility of generating low pressure steam in a McKee boiler from the waste heat of blast furnace slag. Somewhat similar work had been tried on iron slag in England. The usual amount of work was being done to abate the smelter fume nuisance, and new flue installations were being equipped with suspended wires to collect the bulk of the solid material. Electrostatic precipitation was followed in this work, and the baghouse method was used to collect the whole of the remaining solid, but the high cost of installation was an objection. Improvements were also recorded during the year in refining furnace design, and changes in the shape and construction of furnaces for melting cathodes were attempted. Waste heat boiler installations were used in connection with the refining of copper, which aided in producing plant economy.

Zinc. Improvements in minor details were the rule in zinc smelting rather than radical innovations in practice. One important tendency of the year on the part of American smelters was to make retorts of greater tensile strength and durability, so that the previous distillation at very high temperatures could be carried on as was done in Germany and Belgium. The artificial treatment of American clays had made possible progress in this direction, and retorts made by one large smelter showed much longer life. Also considerable attention was being paid to the analysis of the reducing fuel, with the object of securing a better blending of ore reduction material, while the use of crude petroleum and coal dust in both roasting and distillation furnaces was undertaken experimentally, but further work, both experimental and practical, was considered necessary. Another important detail was the treating of residuum, and while in many cases the amount gained was not large, yet it was hoped that it could be increased. Charging machines were being extensively used in place of hand charging, but difficulties in machine charging were being experienced with the excessively fine flotation concentrates that were being handled by some zinc smelters. A retort discharging machine for mechanically discharging retort residues was developed during the year, and received an experimental trial. One of the new roasting furnaces made in Europe, and introduced into the United States in 1914, was the Spirlet multi-hearth turret furnace, in which the hearths themselves are revolved so that the projecting teeth from the bottom of one hearth rabbles the ore of the next hearth below. This furnace could be quickly dismantled for repairs, and was said to desulphurize the blend with the very low consumption of 10 per cent or less. Experiments with the hydrometallurgical process of zinc extraction were in progress at Bully Hill, California, Trail, B. C., Kellogg, Idaho, and elsewhere, several processes being tried on a considerable scale and experimental work being done. In Europe, electric smelting was reported as commercially successful in the Pyrenees, where zinc residues from the indigo dyeing industry were being treated, while experimental work was also being undertaken in Savoy and Belgium. The electric zinc smelting furnaces at Nelson, B. C., were discontinued during the year as the plant was of such small size, namely one ton daily capacity, that its operation was found to be a commercial impossibility. The interesting work of Johnson, at Hartford, was continued during the year, and a company was organized to construct a commercial plant at Keokuk, Iowa, to include a furnace larger than had yet been built and operated.

Iron and Steel. During the year, steel metallurgists were interested in comparing the merits of the duplex process for making steel, with the open-hearth process in the United States, and also with the comparison of the duplex and the open-hearth, with the Talbot process in Germany. The reason that the Talbot process had never been developed in the United States, was doubtless due to the desire to secure a greater output by sacrificing silicon and carbon in the Bessemer process, instead of using them as a fuel for the reduction of iron ore in the Talbot or open-hearth process, and furthermore, the fact that the ores from the northern districts had a lower average of phosphorus than prevails in Europe was probably influential in deciding this matter. During the year was tried the Goldmerstein process for the removal of phosphorus and sulphur by the use of sesquifluoride of iron or manganese. This substance breaks up at a high temperature, and releases the fluorine, which attracts the sulphur and phosphorus, forming volatile fluorides, which pass off as a gas, and cannot be reintroduced by the reducing action of the furnace, as they can be from slag.

The various railway and inspection officials, as well as the metallurgists interested in the improvement of steel rails, were endeavoring during the year to secure a better product. The Lackawanna Steel Company developed a process for milling off the top and bottom surfaces of the rail bloom at a point between the running and finishing mills, the rail being passed by feed rollers between two milling cutters of high speed—steel, some 4 or 5 feet in diameter, running at a speed in excess of a mile a minute. The top and bottom surfaces of the rail bloom were cut off and seams, cracks, and roughnesses, which had been developed in the earlier process of rolling, as well as a large portion of the metal which had been decarbonized in the heat of the furnace was removed, so that metal of normal capacity and better capable of resisting wear than the decarbonized metal removed, is brought to the surface. The finished product thus obtained was considered superior to that manufactured by the ordinary process, and the number of seconds was reduced, so that this company was able to market improved rails at no advance in price over those not treated. The study of fissures in rails was also pursued during the year, and it was a question whether the various defects were due to bad mill practice, or to the severity of stress received in service.

Much work during the year was done on the quality and nature of steel; the micro-constituents and physical and magnetic properties were studied with greater interest than ever before, with the result that accurate investigations were in progress which seemed to promise considerable improvement in steel work.

An interesting apparatus was designed in England for generating steam for use in low pressure turbines. The slag, entering a closed vessel through a seal, was granulated and taken out by a bucket elevator, which discharged it into another elevator working outside the seal, by which the slag was delivered to cars for final disposal.

Inasmuch as corrosive gases, particularly hydrogen sulphide and sulphur dioxide, are produced from the sulphur in the slag, the steam generated in the sealed chamber cannot be used directly in the turbine, but passes into an evaporator, where it is condensed and an equal weight of steam produced from pure water. As the slag contains only about 1/20 of the heat obtainable from the combustion of an equal weight of coal, and probably not over 2/3 of this could be released, it was not believed that the power recovered would pay for the installation involved to carry on the operation.

Electro-Metallurgy of Iron and Steel. The electric steel industry in the five years since 1910, when 114 electric furnaces producing steel were in existence, had made wonderful progress, so that, on Dec. 31, 1914, there were some 213 furnaces distributed among the leading steel producing nations of the world. The Heroult Furnace found the widest application, and there were 56 such furnaces operating in the world, while 19 were building with a yearly capacity of 1,015,450 tons. In the United States alone 15 of such furnaces were in operation with a yearly capacity of 141,200,000 tons, while 3 were building. After the Heroult furnace came the Girod, of which 20 were operating throughout the world, with a capacity of 156,800 tons, while 8 were building. Of these the United States had 3 in operation, with a yearly capacity of 26,775 tons, while 3 were building. Various other furnaces were in use, all of which were, however, in Europe, and of the 213 referred to, 174 were of the arc type, 37 induction, and 2 combined arc and induction. Germany headed the list of electric furnaces, there having been 46 of six different types in use on Dec. 31, 1914. Germany was followed by the United States, with 41 furnaces, and this country in turn by Italy, where there were 22, then came Sweden, and Austria-Hungary with 18 each, France with 17, and Belgium with 16.

In the United States and Canada during 1913 and 1914 three types of furnaces had come into use, which were not operating in Europe. These were the Schneider, Hering, and the special furnace of the Moffett-Irving Steel Works, Limited, of Toronto, Ontario, where steel casts were made direct from the ore. The largest electric furnace plant in the United States to make steel in 1914, was one nearing completion at the plant of the American Iron and Steel Manufacturing Company, at Lebanon, Pa. This installation consisted of 2 20-ton induction furnaces for refining steel, from the new open-hearth department of this company. The electric furnace was useful not only for making steel, but for making pig iron direct from iron ore as at Heroult, Cal., and in Sweden, while the Heroult and other types of electric furnace have been found especially desirable for use in making special alloys and steels.

In France, the commercial production of electrolytic iron was being undertaken at Grenoble by the Compagnie le Fer, and the Cowper-Coles patents for producing sheets and tubes were put to work in England. This process involved using a revolving mandrel, and a neutral solution of iron salts made up from pig iron. This electrolytic iron was able to compete with the best Swedish iron in making special steels. In the United States there were being installed during the year, two large furnaces of the Frick type, with a capacity of 20 tons each for refining steel. They were to operate at 5000 volts, 5 cycles single phase, consuming 1800 kilowatts each. One of the goals aimed at by electro-metallurgists has been to produce steel directly from iron ore in the electric furnace, and that this was possible was once more demonstrated by the tests reported to the Iron and Steel Institute, by Humbert Hethey. See Chemistry, Industrial.

METAPHYSICS. See Philosophy.

METEOROLOGY. At the beginning of the year the Blue Hill Meteorological Observatory adopted the use of dynamic units of pressure and absolute Centigrade degrees of temperature in its reports. Instead of being expressed in millimeters or inches of mercury, pressures were given in millibars (1000 millibars = 750.02 millimeters = 29.53 inches), although until Jan. 1, 1915, it was decided to retain both systems for purposes of comparison. The same units have been in use in the reports of the Meteorological Committee of England since March, 1913, and were also employed by the United States Weather Bureau in the weather maps of the Northern Hemisphere, which, beginning January 1, were published on the reverse side of the regular daily weather chart. This valuable series of maps was discontinued on August 6 on account of the lack of European weather reports due to the outbreak of war. Owing to the confusion arising from the employment of two units termed the "bar," the meteorological defined as above, and the chemical and physical "bar" which is only one millionth of the former, Professor McAdie proposed that the meteorologists should adopt the more rational and longer used unit of the chemists and physicists.

Smoke in Cities. In an article on "The Meteorological Aspect of the Smoke Problem," which appeared in the *Monthly Weather Review* for January, Professor H. H. Kimball discussed the influence of smoke upon the weather of cities. His main conclusion is that the range of maximum and minimum temperatures is lessened, the maximum being lower and the minimum higher than in the surrounding country. He also found that fogs are of longer duration owing to the action of smoke pall in preventing the access of sunlight, and to the retardation of evaporation of the fog particles, due to their being coated with oil.

Climate and Human Efficiency. From an investigation of the wages of a number of workers on piece-work in Connecticut factories, Professor Ellsworth Huntington found that two periods of maximum efficiency, in December and May, were indicated, with minima in January and August. He concluded that maximum efficiency was associated with outdoor temperatures of about 58° Fahrenheit, and with wide variations of temperature on successive days.

Desiccation of the Earth. It has long been recognized that, in spite of the irregular and apparently capricious variations to which the weather is subject, there is a regular cycle of changes involving the climate of the whole globe. Just as in that far-off period of the past, known as the Glacial Period, the polar ice slowly but inexorably covered a great part of the Northern Hemisphere, and drove before it plants and animals, some of which have vanished altogether, so we are now in a period when the earth appears to be growing steadily drier. Between the Glacial Period and the present era of world-wide desiccation, there intervened a period in which the melting of the glacial ice gave rise to huge lakes, and the climate was much moister than it is at the present time. These lakes have steadily decreased in size, and formerly swampy regions have become or are becoming arid deserts. Prince Kropotkin holds that these changes occasioned the great historic migrations of population, attributing the fall of the Roman Empire to the dwindling rainfall of central Asia, which drove the inhabitants to a nomadic life, and impelled them to seek the more fertile lands of Europe on account of the repeated failure of their crops. Others again have maintained that the repeated incursions into Egypt in ancient times were due to long-continued droughts in the surrounding countries. The three principal views of the situation are those held by Prince Kropotkin, Huntington, and Thirlmere. Prince Kropotkin believes that, on the whole, the climate of the globe is advancing slowly toward universal drought. On the other hand, Professor Huntington's researches in central Asia led him to modify this theory. While granting that the resultant tendency is toward greater aridity, he considers that the change is pulsatory, giving rise to an alternation of wet and dry periods, the differences between them being sufficient to have had political and economic results of far-reaching importance. Thirlmere holds the view that the climate varies in great cycles lasting several thousand years, and that our springs and summers are growing yearly shorter and colder.

In *The Climatic Factor*, issued by the Carnegie Institution of Washington, Professor Huntington discusses the evidence derived from a study of the physiography of Arizona, New Mexico, and southwestern North America, and the traces of ancient human occupation still to be found in that region, and concludes that the general climatic history of America shows pulsations of character similar to those in Asia, and having a periodicity of hundreds of years. He suggests that they may perhaps furnish a key to the pre-Columbian chronology of America, which, in the absence of written documents, is involved in uncertainty, and adduces evidence to show that the periods during which the southwest has been first relatively habitable and then relatively uninhabitable may be determined from the curves of growth of ancient trees.

The question of the desiccation of the earth was also examined by Professor Gregory in a paper entitled, "Is the Earth Drying Up?," which was published in the *Geographical Journal* for February and March. He concluded that, while there have been many widespread climatic changes in late geologic times, there has been none in historic times. There has been increased aridity in the regions studied by Huntington, but this is compensated by increased humidity in other regions of the globe, such as northwestern Europe, eastern North America, and parts of central and south Africa.

UPPER AIR RESEARCH. According to Van Bemmelen, the lowest air temperature ever recorded is —91.9° C. (—133.4° F.), which he obtained at a height of about 17 kilometers (10.6 miles) by a *ballon sonde* liberated at Batavia on Nov. 5, 1913. From this point upward an increase to — 57.1°C. was recorded, being reached at a height of about 26 kilometers.

METHANOMETER. See CHEMISTRY, INDUSTRIAL.

METHODIST BROTHERHOOD. An organization of the Methodist Episcopal Church, formed in 1908 by the affiliation of two general brotherhoods, the Brotherhood of St. Paul and the Wesley Brotherhood. The aim of the brotherhood is to utilize and develop the features of the church relating to men, and to reach unchurched men and boys, and to provide them with a task commensurate with their powers and with the importance of the gospel ideal. Considerable literature has been created, consisting largely of four, six, and eight-page folders, each dealing with some aspect of men's work, and written for the express purpose of inciting other men elsewhere to similar efforts. In November, 1914, a coalition was formed between the Methodist Brotherhood and the Adult Bible Class movement.

The officers of the Brotherhood in 1914 were: president, Wilford M. Wilson; vice presidents, Christian F. Reisner, Frank Mason North, William Arnold Shanklin, Alfred E. Craig, and Ernest Gideon Bek; recording secretary, James R. Joy; and treasurer, Samuel McRoberts.

METHODIST EPISCOPAL CHURCH. The total church membership of this denomination in the United States in 1914 was 2,199,513. There were enrolled during the year, 177,760 members. There were 12,164 members of the ministry, and 6792 local preachers. The Sunday schools numbered 18,858, with 237,679 officers and teachers, and an enrollment of 2,432,098. There were 18,339 churches, with an estimated value of $111,866,502. Throughout the world the total membership in 1914 was 2,246,899. There were in the United States and territories, 105 annual conferences, and in foreign countries, 24. In addition, there were 16 missions and mission conferences in the United States and Territories, and 12 in foreign countries. In the United States there are 17 Episcopal areas, each presided over by a bishop, and in foreign countries there are 5 special areas. During the year three bishops died. These were Bishop John Morgan Walden, Bishop Robert McIntyre, and Bishop Charles William Smith. Thomas Bowman, former bishop, also died during the year.

The total receipts from November, 1913, to October, 1914, amounted to $1,170,258. The disbursements for all purposes amounted to $1,170,098. The missions of the denomination are carried on throughout the world. There were in 1914, 187,144 members of the denomination in foreign countries. The baptisms made during the year numbered 41,186.

The work in Europe was seriously hampered by the war. The domestic missions are in the hands of the Board of Home Missions and Church Extension. The general education work of the denomination is in the hands of the Board of Education. There are 43 colleges and universities under its auspices, and in addition, a number of professional and theological schools. The social work of the denomination is carried on largely by the Methodist Federation for Social Service, organized in 1907. Social associations have been organized in various annual conferences. At the end of the year there were about 50 of these.

METHODIST EPISCOPAL CHURCH, SOUTH. There were in this denomination at the beginning of 1914, 1,196,877 communicants, 7203 traveling preachers, and 17,006 houses of worship, valued at $53,683,291. In the Sunday schools were 1,479,977 scholars, with 134,930 officers and teachers. In the Epworth League were 133,380 members. There were twelve active and two superannuate bishops in 1914. The official headquarters of the denomination are in Nashville, Tenn., where its publishing enterprises are carried on. Although the denomination has no social service organization, good work is being accomplished through a committee of the Woman's Missionary Council. This maintained 20 "Wesley houses," which are social settlements for the whites, and 3 "Bethlehem houses" for the negroes. About 50 deaconesses give their entire time to social service. Attention is being given to the needs of the negro, especially to home environment, his education, his treatment in the hands of the law, and to the fostering of mutual race respect.

METHODISTS, Colored. The most important bodies of Colored Methodists are the African Methodist Episcopal Church and the African Methodist Episcopal Zion Church. There are also the Colored Methodist Episcopal Church, the Zion Union Apostolic Church, the Union American Methodist Episcopal Church, and the Reformed Methodist Union Episcopal Church. The African Methodist Episcopal Church has about 620,000 communicants, 6000 churches, and 5000 preachers; the African Methodist Episcopal Zion Church, about 570,000 communicants, 3200 churches, and 3600 preachers; and the Colored Methodist Episcopal Church, about 275,000 communicants, 3000 churches, and 3000 preachers. The larger denominations have their chief strength in the Southern States.

METRIC SYSTEM. See Weights and Measures.

METROPOLITAN MUSEUM OF ART. See Painting and Sculpture.

METROPOLITAN OPERA COMPANY, New York. See Music.

MEXICO. A Federal republic lying between the United States and Central America; called in its official publications *Estados Unidos Mexicanos* and *República Mexicana*. The capital city is Mexico, in the Federal District (Distrito Federal). The statistical publications of the Mexican government are belated, presumably as a result of the continued civil war, so that in many cases statistics published in the last Year Book are still the latest available.

Area and Population. The area of Mexico is officially stated at 1,987,201 square kilometers (767,258 square miles). The population increased from 12,632,427 in 1895 to 13,607,259 in 1900, and 15,160,369 in 1910 (census of October 27). The population, according to estimate, had increased to 15,501,684 in 1912. Of the total in 1910, males numbered 7,504,471, and females 7,655,898.

Only a small proportion of the population is of pure white race. In 1900, pure whites, and nearly pure, constituted about 19 per cent of the total; persons of mixed Indian and white blood, about 43 per cent; Indians, about 38 per cent. In respect of civil estate, the 1910 census returned 5,424,447 minors; the civil estate of 34,905 persons was not reported; of the remaining inhabitants—9,701,017—the unmarried numbered 4,682,490 (2,306,215 males, 2,376,275 females); married, 4,110,761 (2,056,806 males, 2,053,955 females); widowed (including divorced), 907,766 (248,129 males, 659,637 females). Persons of Mexican birth numbered in 1910, 15,043,842 (7,422,565 males, 7,621,267 females); persons of foreign birth, 116,527 (81,896 males, 34,631 females). Persons of Spanish birth in 1910 numbered 29,541 (22,899 males, 6642 females); Guatemalan, 21,434 (11,098 and 10,236); American, 20,639 (12,983 and 7656); Chinese, 13,203 (13,118 and 85); British, 5264 (3416 and 1848); French, 4604 (3232 and 1372); German, 3827 (2806 and 1021); Cuban, 3418 (1923 and 1495); Turkish, 2907 (1942 and 965); Italian, 2595 (1822 and 773); Japanese, 2216 (2037 and 179); Arabian, 1546 (1116 and 430); Danish, 613 (473 and 140).

The 1910 census returned Roman Catholics to the number of 15,033,176 (7,425,722 males, 7,607,454 females); Protestants, 68,839 (39,480 and 29,359); Greek Orthodox, 630 (370 and 260); Mohammedans, 602 (546 and 56); Buddhists, 6237 (6038 and 199); Jews, 254 (183 and 71); other religious adherents, 5605 (5121 and 484); without religion, 25,011 (16,169 and 8842); unknown, 20,015 (10,842 and 9173).

Spanish-speaking persons in 1910 were returned as numbering 13,143,372. Some of the other vernaculars were represented as follows: Amuzgo, 9224; Chinanteco, 21,745; Chol, 12,337; Chontal, 25,443; Chatino, 11,681; Huasteco, 52,063; Maya, 227,883; Mayo, 16,785; Mazahua, 65,928; Mazateco, 36,176; Náhautl (Mexicano), 516,410; Mixe, 166,157; Otomi, 209,640; Popoloco or Chocho, 11,965; Tarahumar, 21,538; Tarasco, 37,173; Tepehua, 8441; Tejolabal or Chañabal, 5521; Totonaco, 67,740; Tzendal, 46,960; Zapoteco, 224,863; Zoque, 8470.

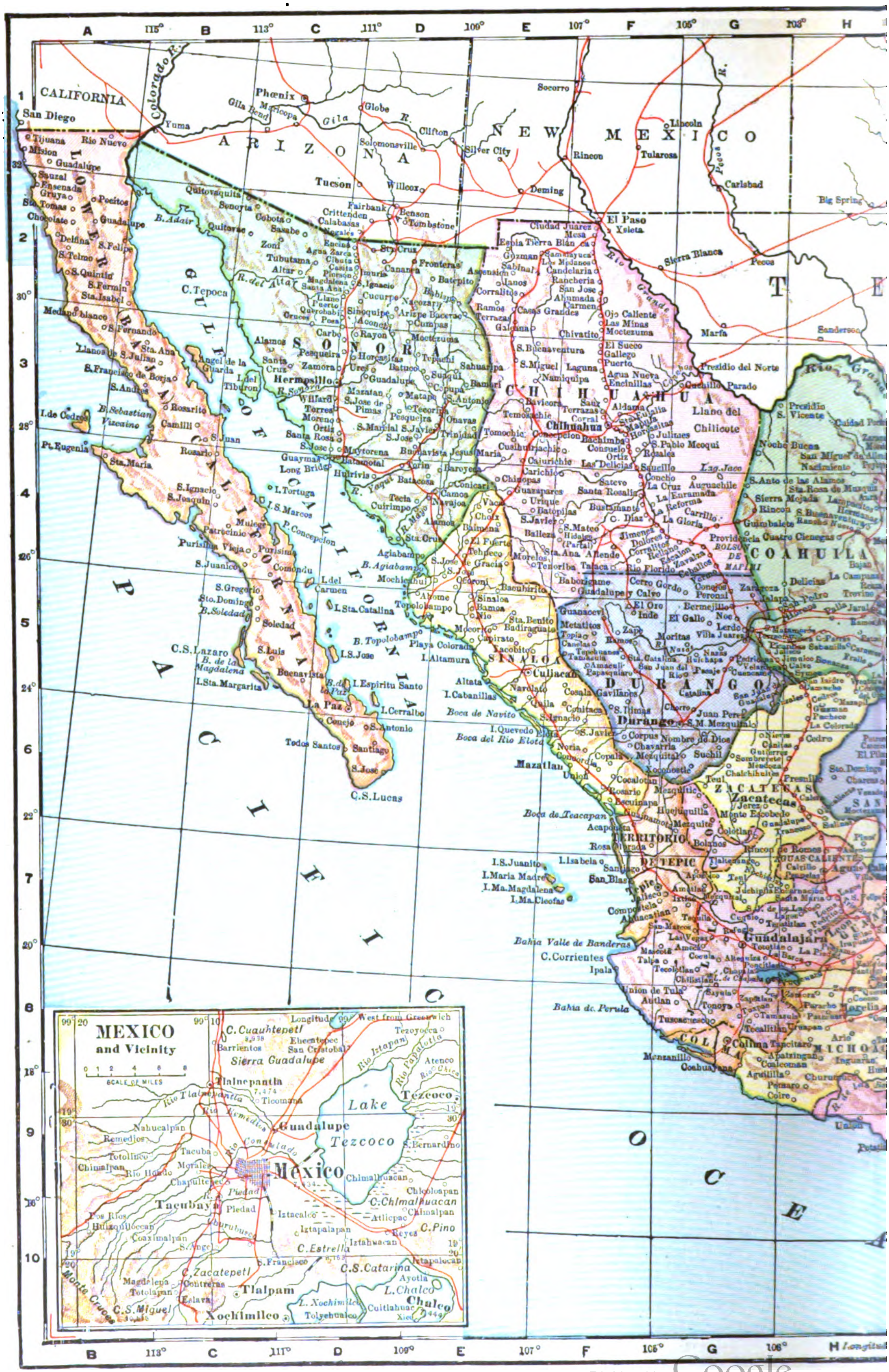
Mexico, the capital city, had 471,066 inhabitants in 1910, the increase over 1900 being 36.65 per cent.

Marriages reported in 1909 and 1910 respectively, 55,440 and 54,339; births, 509,666 and 484,744; deaths, 482,817 and 504,022. In 1909, the reported immigration was 80,748 and emigration 81,251; immigration in 1910, 86,909. The reported number of arrivals in the year 1911–12 was 97,576.

Production. In proportion to the natural capabilities of the country, agricultural production is small. Farming methods are primitive. The important crops include corn, cotton, henequen, wheat, sugar cane, beans, coffee, and tobacco. Grazing is a profitable industry. Mexico is exceptionally rich in minerals, especially silver and gold; and petroleum, copper, lead, antimony, zinc, and other minerals are exploited. In the 35 years from 1877–78 to 1911–12, the gold output amounted to 395,904.7 kilogrammes, valued at 527,871,760 pesos; silver, 49,600,726.5 kilogrammes, valued at 1,973,394,124 pesos; total value of gold and silver, 2,501,265,884 pesos.

The approximate petroleum output in 1908 was 3,481,000 barrels; in 1909, 2,489,000 barrels; in 1910, 4,532,000 barrels; in 1911, 12,629,000 barrels; in 1912, 15,689,000 barrels. It is estimated that in 1913 petroleum production reached 26,000,000 barrels. The total value of Mexico's mineral output in the year 1911–12 was over 209,700,000 pesos.

The principal manufactures are cotton and other textile goods, tobacco (including cigars and cigarettes), sugar, and spirits. The mill consumption of raw cotton in the year 1910–11 was 34,568,212 kilogrammes, and the output of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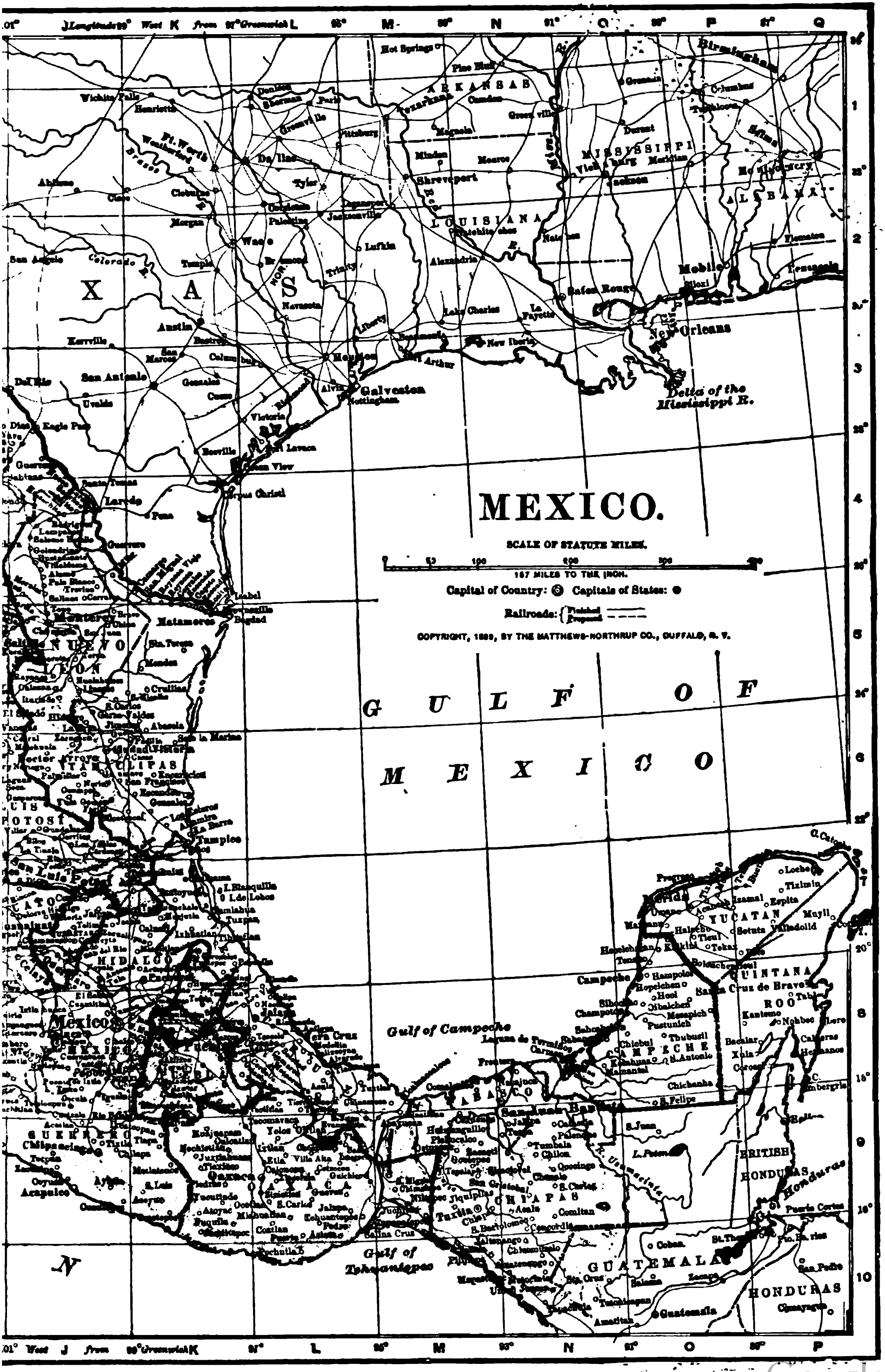
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Ft. Worth
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Abilene
Cisco
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Lake Charles
La Fayette
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TABASCO
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YUCATAN
Valladolid
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Espita
Tizimin
C. Catoche
QUINTANA ROO
Santa Cruz de Bravo
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cotton goods and prints was 15,090,669 bolts and 2,766,973 kilogrammes of yarn; in 1911–12, the mill consumption was 33,153,636 kilogrammes, and the output 14,128,366 bolts and 3,020,569 kilogrammes of yarn. In 1910–11 tobacco manufacturing consumed 8,874,118 kilogrammes, and in 1911–12, 10,137,790 kilogrammes. In the former year, there were produced by 1543 distilleries 37,127,173 litres of spirits.

COMMERCE. Statistics of the Mexican foreign trade are not available for the fiscal year 1914. But while in the fiscal year 1913 there was an increase in both imports and exports, it is clear that in 1914 there was serious commercial depression, one of the results of the continued revolutionary movements in the republic. For the first nine months (ending March 31) of the fiscal year 1914, the imports were valued at 121,462,149 pesos, as compared with 148,370,758 pesos in the first nine months of the fiscal year 1913, the decline being 18.14 per cent. The exports in the same period of the fiscal year 1914 were valued at 185,666,115 pesos, as compared with 230,736,754 pesos in the corresponding period of 1913, the decline being 19.53 per cent. Classified imports for the first nine months of the fiscal years 1913 and 1914 respectively were as follows, in thousands of pesos: animal substances, 14,567 and 8001; vegetable substances, 24,860 and 19,758; mineral substances, 36,931 and 34,157; textiles and their manufactures, 19,486 and 14,508; chemicals and drugs, 9524 and 6825; beverages, 5129 and 3540; paper and its manufactures, 4115 and 3781; machinery and apparatus, 18,221 and 17,273; vehicles, 4313 and 3103; arms and explosives, 3101 and 4636; miscellaneous, 8123 and 5880; total, 148,371 and 121,462. Classified exports for the nine months ended March 31, 1913, and 1914, respectively, in thousands of pesos: mineral products, 146,625 and 89,279; vegetable products, 64,013 and 79,156; animal products, 15,092 and 13,621; manufactures, 2852 and 2484; miscellaneous, 1154 and 1126; total, 230,737 and 185,666. For the 1913 and 1914 periods respectively, the gold export amounted to 104,560 thousand and 61,233 thousand pesos; silver, 104,560 and 61,233; copper, 28,427 and 9437; petroleum, 8022 and 14,693; coffee, 6526 and 18,908; guayule, 5803 and 710; raw henequen, 23,301 and 33,113; cattle, 5598 and 3405; untanned hides, 8669 and 9228.

In fiscal years prior to 1914, imports, exports of merchandise, exports of silver and gold and their ores, and total exports have been valued as follows, in pesos:

	Total Imports	*Exports*		*Total exports*
		Sil. & gold	*Other*	
1900	128,796,606	79,216,597	79,031,336	158,247,933
1905	178,204,963	93,885,527	114,634,924	208,520,451
1910	194,865,731	118,985,524	141,060,746	260,046,270
1911	205,874,278	142,958,367	150,795,273	293,753,640
1912	182,662,311	139,473,469	158,515,660	297,989,129
1913	195,772,339	130,885,000	169,521,000	300,405,617

In the year ending June 30, 1913, the leading exports were valued as follows, in thousands of pesos: silver, 91,297; gold, 39,591; copper, 36,522; raw henequen, 30,150; coffee, 11,264; hides, 11,172; rubber, 8376; live animals, 7552; guayule, 7235; chicle, 4930; lead, 4907; chick-peas, 4342; ixtle, 3646; woods, 3365; zacatón root, 1960; antimony, 1575.

Trade by countries in years ended June 30, in thousands of pesos:

	Imports		*Exports*	
	1911-12	*1912-13*	*1911-12*	*1912-13*
United States	98,426	97,283	224,108	282,086
United Kingdom	21,501	25,900	40,199	81,147
Germany	28,845	25,221	10,817	16,438
France	15,618	18,888	8,830	7,151
Spain	5,900	10,581	2,861	2,188
Belgium	8,279	2,803	6,855	5,121
Italy	1,949	1,884	157	94
Austria-Hungary	2,091	1,901	208	7
Total, including other	182,662	195,772	297,989	300,406

In 1910–11, there were entered at the ports, in the foreign trade, 1998 vessels, of 3,727,519 tons, and cleared 1964 vessels, of 3,852,234 tons; in 1911–12, entered 2090 vessels, of 3,604,527 tons, and cleared 2059 vessels, of 3,714,742 tons. In 1911, the merchant marine included 32 steamers, of 16,648 tons net, and 50 sail, of 8712 tons net.

COMMUNICATIONS. The length of railway in operation increased from 24,717 kilometers (15,358 miles) in September, 1911, to 25,287 kilometers (15,713 miles) in 1912 and 25,398 kilometers (15,782 miles) in 1913. Of the length in 1913, 19,877 kilometers were controlled by Federal or State government. In 1913 there were 516 Federal telegraph offices, with 85,047 kilometers of line; other telegraph lines, 8387 kilometers; radiotelegraph stations, 24. Post offices (1913), 2911.

The political situation in Mexico naturally had its effect on the operation of the railways, and the different lines that comprise the national railways of Mexico at the end of the year were divided again into several sections, each of which was under the control of opposing political factions. The Cuernavaca division, extending from Mexico City to the Balsas River, was to be opened for through traffic for the first time in more than three years, as the territory occupied by General Zapata and his forces was merged with that under the control of General Villa. In the State of Morelos, in the month of December, the branch lines of the Interoceanic were opened to traffic after a long suspension, while on the other hand, General Carranza's forces were in control of some of the northern divisions running out of Monterey, Tampico, Laredo, Eagle Pass, and Saltillo, and a part of the Interoceanic running from Vera Cruz. The Carranzistas were also in charge of the National Tehuantepec line, and all of the Vera Cruz and Pacific, the latter being a part of the National Railways of Mexico. At the end of the year the chaotic condition was about as marked as at any time since the revolutionary troubles started about 1910. In fact, an entire cessation of railway construction in Mexico was to be noted during 1914, and considerable destruction of track and interruption of operation, due to disturbed internal conditions, was the order.

FINANCE. The monetary unit is the peso, par value 49.846 cents. The unsettled political conditions have caused a great decline in the actual present value of the monetary unit. In March, 1913, the peso was worth 48.4 cents; in March, 1914, 31.03; toward the end of 1914, about 25. In the fiscal year 1910–11 revenue amounted to 111,142,482 pesos, and ordinary expenditures to 100,913,924 pesos; in 1911–12, revenue, 105,203,087 pesos, and ordinary expenditure, 96,985,953. The budget for 1913–14 showed estimated revenue of 122,000,000 pesos and estimated expenditure of 141,155,437 pesos. The larger estimated disbursements were: war and marine, 43,724,839 pesos; finance and public debt, 37,261,878; interior, 19,418,212; public instruction, 13,926,600; communications, 15,013,517.

Public debt, April 1, 1913: foreign, 313,062,190 pesos; internal, 134,217,875; floating, 4,072,700; total, 452,352,765. Charges on the external debt, 29,701,647 pesos; internal, 14,389,655; total charges, 44,091,302.

ARMY. Comment on the army of Mexico during the year 1914 is manifestly impossible, as it would be difficult to determine which forces should be so designated, for there had been considerable disintegration of the original national army, and the formation of various organized bands by the different leaders, not many of which were drilled and organized as a cohesive military force.

NAVY. At the beginning of 1914, the navy included: one gunboat (*Veracruz*, built in 1903), of 1000 tons; two gunboats (*Morelos* and *Bravo*, 1904), of 1200 tons each; one transport (*Progreso*); two corvettes (*Zaragoza* and *Yucatán*); three dispatch boats; and several small vessels of little value.

GOVERNMENT. The Mexican constitution bears date of Feb. 5, 1857, with amendments of various dates to April 25, 1912. The republic is a federation of States autonomous in local affairs. The legislative power is vested in a Congress of two houses, the Senate and the Chamber of Deputies. Senators, 56 in number, are elected by direct vote for four years, two for each State and the Federal District. The Deputies, 233 in number, are elected by direct vote for two years. The constitution provides that the President and Vice-President be elected by indirect vote for six years. The President is assisted by a Cabinet of eight members. Gen. Porfirio Díaz was President during 1877–80 and from 1884 until May 25, 1911, when he was forced to resign on account of the revolution headed by Gen. Francisco I. Madero. The Minister for Foreign affairs, Francisco León de la Barra, succeeded to the executive office as Acting President. In October, 1911, Madero was elected President, and on November 6 was inaugurated for the unexpired term (ending Nov. 30, 1916). The newly elected Vice-President was José Marino Pino Suárez. On Feb. 18, 1913, Gen. Victoriano Huerta proclaimed himself Provisional President, and on February 23, Madero and Pino Suárez were murdered. Huerta was succeeded as Provisional President by Francisco Carbajal, July 15, 1914; Carbajal was succeeded by Gen. Venustiano Carranza, Aug. 12, 1914; Carranza was succeeded by Eulalio Gutiérrez, Nov. 10, 1914; and Gutiérrez was succeeded by Roque González Garza, Jan. 16, 1915. The Constitutionalist party does not recognize the presidency of either Huerta, Carbajal, or Gutiérrez.

HISTORY

ELEMENTS OF UNREST. The spectacular events which transpired with such bewildering rapidity in the distressed republic of Mexico, were not so much indicative of national unfitness for self-government as they were symptomatic of the complexity of national problems. (1) When Gen. Victoriano Huerta seized the reins of government in February, 1913, after assisting in the overthrow, and perhaps conniving at the assassination of President Madero, the issue was simply political—whether a "military despotism"* "stained by blood" should be allowed to usurp the place of constitutional government in Mexico. President Huerta's *coup d'état* of Oct. 10, 1913, had accentuated the constitutional struggle. It was on this score that the President of the United States declined to recognize Huerta, and lent moral support to the "Constitutionalist" rebellion against the Mexico City dictator. (2) During the course of the year 1914, however, as it became increasingly clear that the conflict was not purely a political contest between democracy and despotism, a new issue became uppermost in the apologies of the rebels, as well as in President Wilson's pronouncements. The new issue was the land. The Constitutionalists and the Zapata bandits claimed to be fighting for the right of each poverty-stricken peasant or peon to possess his own little plot of land. Mexico could never be pacified, they said, while a handful of enormously wealthy landed proprietors kept the rural population in poverty and virtual serfdom. It was, indeed, confusing to discover that the leader in this war against the landlords, Venustiano Carranza, was himself one of the largest landowners, and to learn that the abhorred Huerta despotism had actively undertaken agrarian reform; nevertheless the official opinion in Washington and public opinion in the United States generally, clung to the conviction that Carranza's armies were fighting for the economic enfranchisement and the political liberties of the peon. (3) The situation was still further complicated by a religious question. While Huerta had never been a conspicuous protector of religion, at any rate he had not been its bitter enemy. The rebels, on the other hand, making no secret of their enmity for the Roman Catholic Church, openly persecuted the clergy and interfered with religious liberty. (4) Less open in its operation, but none the less potent, was the influence of foreign interests in Mexico. When it is borne in mind that most of the railway capital, most of the mining property, most of the oil business in Mexico, was owned in the United States; when it is remembered that the American investments in Mexico amounted to over a billion dollars, English investments to over $300,000,000, and French investments to $143,000,000; when it is realized that the average annual export of minerals from Mexico was about $90,000,000—the importance may be appreciated of the foreign financial interests at stake. The assertion was frequently encountered that various financial interests in the United States and in Great Britain had given aid to one faction or another in Mexico, with the hope of obtaining concessions for new oil wells, mines, and railways, when the faction should find itself in power. (5) Finally, the element of personal ambition must be taken into account. To a man of forceful character and military ability, the anarchic condition of the country offered abundant opportunities. The "generals" and the soldiers who lived by plunder, free from the restraints of civil life, were naturally averse to laying down their arms and earning a living by honest labor.

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* President Wilson's words.

Decline of Huerta's Power. The announcement in January that the Mexican government could not pay the interest due on the public debt, and the consequent resignation of finance minister, Adolfo de la Lama, afforded positive proof that President Wilson's policy of non-recognition and "watchful waiting" had effectually prevented Huerta from securing foreign financial assistance, and had left him without the funds needed to conduct the administration, to pay the soldiery, to suppress the rebellion. He could, it is true, collect some money from domestic banks and from wealthy citizens; but in this respect he labored at a serious disadvantage as opposed to the rebels, who with free hand confiscated both ecclesiastical and private property, and exacted large sums from private individuals, under the justification of military exigency. In February, Huerta was made to feel the weight of President Wilson's displeasure in a new way. Hitherto the importation of arms into Mexico, across the American frontier, had been prohibited under a proclamation dating from Mr. Taft's administration; but on February 3 President Wilson lifted the embargo on arms. As the Constitutionalist rebels controlled the northern part of Mexico, the free importation of arms was obviously designed for their benefit. Immediately the Constitutionalists purchased large quantities of arms, ammunition, field-guns, and machine-guns in the United States, and the effect was soon registered in the increased activity of the Constitutionalist armies. While his position was thus being swiftly and surely undermined, President Huerta endeavored to restore confidence in his government by releasing the deputies who had been imprisoned in October, 1913, by convoking the regular session of Congress on April 1, and by undertaking popular reforms. In his message to Congress he proposed to reform the local government by establishing justices of the peace throughout the country. Even more important was his proposal for the imposition of "an equitable tax on all uncultivated land"; such a tax, it was believed, would be equivalent to levying a fine on the great landed proprietors, the *hacendados*, who withheld from cultivation vast tracts of fertile land. The Uncultivated Land Tax Bill was unanimously passed by the Chamber of Deputies on May 24, and was enthusiastically applauded as an important forward step in the solution of the agrarian problem. In order to ameliorate the condition of factory-workers, the government prepared a Labor Bill which provided that any textile-mill owner who would pay his employees on a scale approved by the government should have 50 per cent of his taxes refunded. Another bill, passed in June, contemplated the creation of two new Federal Territories in the State of Chihuahua, and the transformation of the State of Morelos into a Federal Territory. In a speech on May 28, Querido Moheno, Huerta's minister of commerce and industry, declared that the oil concessions which the Pearson interests had obtained from Porfirio Díaz were unjust, and that in the future the government must not abandon the national resources of Mexico to be exploited for the exclusive profit of foreigners. The policy enunciated by Moheno was borne out by the action of the Mexican Congress in June, granting to Mexican citizens, Pedro Barrenechea and Gen. Francisco Romero, the right to develop oil lands in the States of Vera Cruz and Tamaulipas. The legislative activity of Huerta's government was, however, little more than a brave pretense. The Constitutionalist armies were steadily drawing nearer to Mexico City. In the face of impending disaster, one after another of the ministers dropped out of the Cabinet:—on May 1, foreign minister, Lopez Portillo y Rojas; on May 18, the minister of public works and communications, J. M. Lozano; on May 26, the minister of agriculture and colonization, Eduardo Tamariz; on July 3, the minister of industry and commerce, Querido Moheno. On July 5 a general election was held. Most of the members of Congress were returned to their seats, and Huerta was elected President, notwithstanding the fact that holding the provisional presidency at the time of the election rendered him constitutionally ineligible for the presidency. Neither the Catholic party nor the Liberal party participated in the election; in fact, so few votes were cast that the whole procedure was farcical. Such a sham election could not save a government which was already tottering to its fall.

Policy of the United States. The final collapse of the Huerta régime was in no slight degree due to the policy of the government of the United States. By refusing to recognize Huerta, President Wilson had made it almost impossible for the Provisional President to borrow money. By lifting the embargo on arms, the United States had afforded indirect but valuable assistance to the rebels. In a series of notable speeches, President Wilson had made it unmistakably clear that, while his policy was one of "watchful waiting," his sympathies were with the revolutionists. And in gratitude the rebel leader, Carranza, issued a manifesto, April 6, expressing his admiration for the people and the President of the United States, and recognizing the right of the United States to protect European interests in America. On April 7, 1914, some 700 Spaniards arrived in El Paso, Texas, having been expelled from their homes in Torreon, Mexico, and robbed of their possessions by Francisco Villa, one of the leading generals of the Constitutionalist revolution. According to the report of the British Consul at Galveston, Villa had also caused, on February 17, the murder of William S. Benton, a British citizen resident in Mexico. Only after irritating refusals and delays did Villa yield to the request that Benton's widow, together with American and British representatives, should be allowed to examine the body. Such incidents were embarrassing, but did not seriously affect the friendly relations existing between the Constitutionalists and the United States government. Against Victoriano Huerta, on the other hand, the hostile feeling in Washington grew steadily more pronounced, until in April the climax was reached with the "Tampico incident," and the occupation of Vera Cruz.

The Tampico Incident. On April 9, while the Constitutionalist and Federal armies were fighting for possession of Tampico, on the eastern coast of Mexico, a party of American bluejackets landed at the Iturbide bridge in Tampico, within the Federal lines, and were immediately apprehended by Federal soldiers. . Within an hour and a half, after it had been explained that the Americans came on a peaceful errand to purchase gasoline, they were released. Apologies were promptly offered by the Federal commander in Tampico, General Zaragosa, and by Provisional President Huerta. Huerta promised, moreover, that the officer responsible for the arrest, Colonel Hinojosa, should be properly disciplined. Not satisfied with these amends, the American Rear Admiral Henry T. Mayo demanded on April 10 that a salute should be fired to the American flag, since the Mexicans were held to have insulted the flag by arresting bluejackets from a boat on which the flag was displayed. The Mexicans refused to comply with Admiral Mayo's demand, on the ground that the incident was absurdly trivial, and that no intentional insult had been offered to the American flag sufficient to justify the firing of a salute. Yielding to the representations of the chargé d'affaires, Nelson O'Shaughnessy, Huerta consented to the salute, on condition that the United States should promise in writing to return the salute gun for gun. On April 13, the President's personal representative, John Lind, arrived in Washington to report the information he had obtained on the Mexican situation while residing in Vera Cruz. On April 14, practically the entire United States navy was ordered to Mexican waters. On April 18, President Wilson informed Huerta that the salute must be fired before 6 P. M. the following day, without any written agreement as to the return salute. As Huerta remained obdurate, President Wilson, on April 20, asked Congress to authorize the use of armed force. Explaining his insistence upon the salute, President Wilson said, "It was necessary that the apologies of General Huerta and his representatives should go much further, that they should be such as to attract the attention of the whole population to their significance, and such as to impress upon General Huerta himself the necessity of seeing to it that no further occasion for explanations and professed regrets should arise. I therefore felt it my duty . . . to insist that the flag of the United States should be saluted in such a way as to indicate a new spirit and attitude on the part of the Huertistas." Critics of the administration urged that the Tampico incident was too trivial to be used as a pretext for war. It was furthermore alleged that, since a salute was customarily demanded only as the official expression of a nation's regret for an affront to another nation, the United States could hardly demand such a salute from Huerta without recognizing him as the official representative of the Mexican nation. And how could the armed forces of the United States invade the territory of a neighboring nation to wage war upon a private individual? President Wilson, however, explained that, while he was sending the forces of the United States to fight the Huerta faction in Mexico, he had no intention of entering into a conflict with "the people of Mexico."

THE OCCUPATION OF VERA CRUZ. While the United States Congress was debating a resolution to authorize the employment of armed force in Mexico, President Wilson ordered the opening of hostilities—the seizure of the customs house at Vera Cruz, in order to prevent the Huertistas from receiving a large supply of guns and ammunition brought from Europe by the German steamer *Ypiranga*. The arms could not be seized on board the German ship, but by occupying the customs house, the United States could keep them from falling into Huerta's hands.* Accordingly at 11:30 A. M. on April 21 a detachment of American marines was sent ashore from the *Prairie* and the *Florida* to seize the customs house, which was situated on a long pier. From nearby houses the Mexicans fired upon the landing party. With the aid of the *Chester's* guns, however, the Americans were able to clear the streets and buildings near the customs house, and to occupy also the railway terminals, and the postal telegraph, and cable offices. On the following day General Maas with several thousand Mexican troops withdrew, leaving the city in the hands of the Americans, who had been reënforced by the landing of 3000 more marines and sailors. Altogether the seizure of Vera Cruz cost the Americans 18 killed and 70 wounded; the Mexican losses amounted to 126 killed and 195 wounded. The seizure of Vera Cruz was fiercely resented in Mexico. At Monterey the American Consul-General, Mr. Hanna, was cast in jail and the American flag was trampled in the dust. There were demonstrations in Mexico City. Even Carranza was moved to issue an angry protest, notwithstanding the assurances he had received that the United States meditated no hostile action against the Constitutionalists. General Villa, however, wishing to remain on friendly terms with the American government, exercised a moderating influence upon his indignant chief. Vera Cruz became the haven of refugees of all descriptions—Americans who feared an anti-American uprising, foreigners who found residence in Mexico too exciting, priests who had been expelled from their parishes by the rebels, and nuns who feared the lawless Constitutionalist soldiers. In the city of Vera Cruz the collection of the customs duties, and the various municipal departments of finance, justice, education, and the post office, had been taken over by American officials. Robert J. Kerr of Chicago had been appointed civil governor of the city to improve sanitary conditions and to clean out the prisons. Undoubtedly much was accomplished in this respect. On April 30 the naval forces turned the city over to General Funston with 6000 soldiers of the regular army of the United States. General Funston, it was asserted, intended to seize a railway bridge 27 miles from Vera Cruz on the road to Mexico City; but his more ambitious military plans were halted by the State Department, and he was restricted to the prosaic task of surrounding Vera Cruz with entrenchments and supervising the civil government of the city. Peace negotiations had already been set on foot by the mediatory action of three South American nations.

THE "A B C" MEDIATION CONFERENCE. On April 25, just four days after the United States had inaugurated hostilities at Vera Cruz, the diplomatic representatives at Washington of the so-called "A B C" Powers—Argentina, Brazil, and Chile—offered to act as mediators in arranging a peaceful settlement of the quarrel between General Huerta and the United States of America. In accordance with the pacificatory proposals of the "A B C" mediators, President Huerta and President Wilson readily agreed to an armistice and a conference; but General Carranza refused to suspend hostilities, declining

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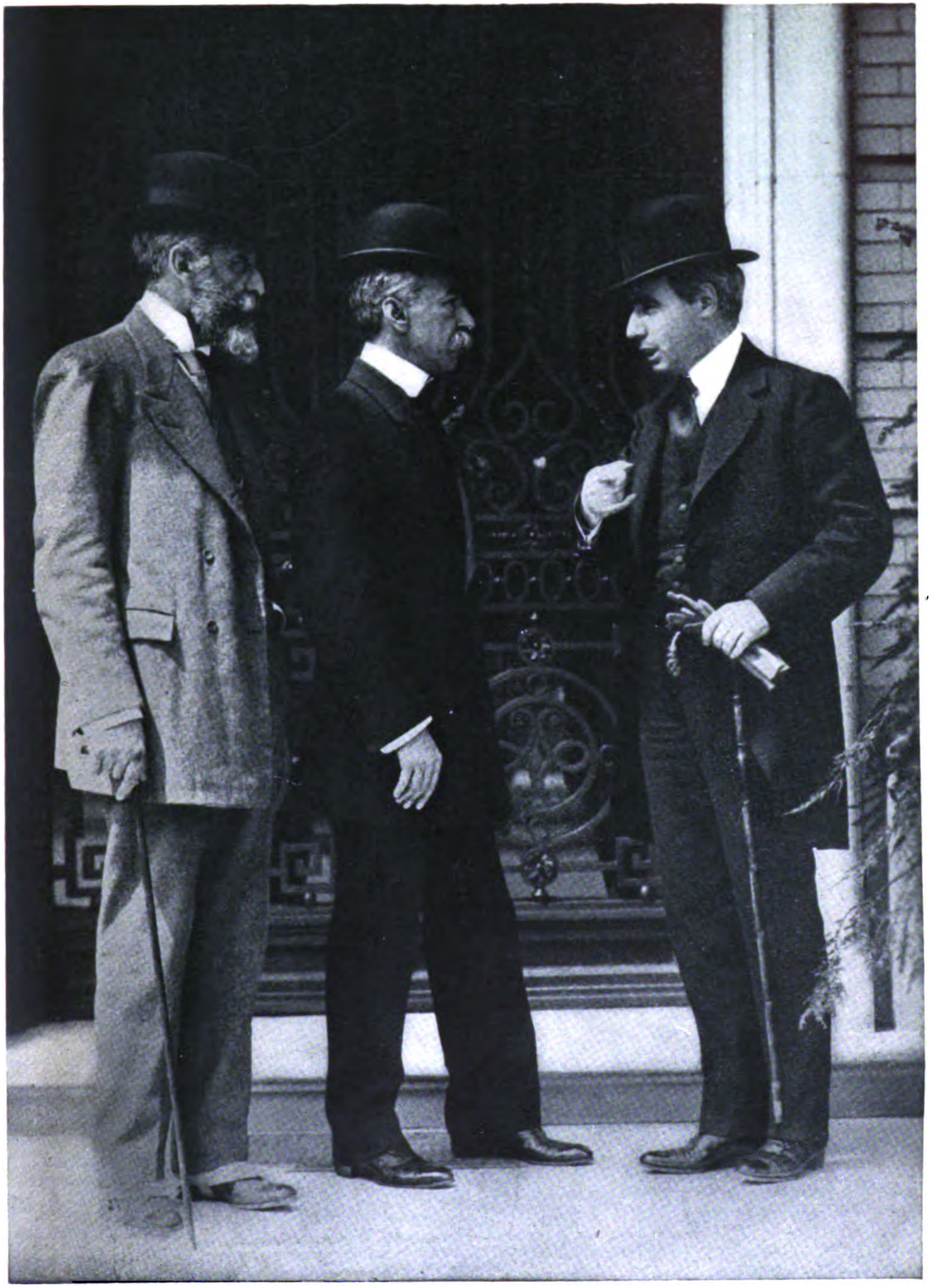
* The *Ypiranga's* cargo was not landed at Vera Cruz, but was shortly afterwards delivered to the Huertistas at Puerto Mexico.



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THE SOUTH AMERICAN MEDIATORS IN THE MEXICAN SITUATION OF 1914

FROM LEFT TO RIGHT: THE CHILEAN AMBASSADOR, SEÑOR EDUARDO SUÁREZ; THE BRAZILIAN AMBASSADOR, SENHOR DOMICIO DA GAMA; THE AMBASSADOR FROM ARGENTINA, SEÑOR RÓMULO S NAÓN

to abide by the result of diplomatic negotiation, and preferring rather to submit the Constitutionalist cause to the arbitrament of arms. Carranza was therefore not at first represented in the conference which met at Niagara Falls, Canada, on May 20. Mr. George Pearly, Canadian Secretary of State, welcomed the mediators and delegates in behalf of the Canadian government. The three mediators were diplomats of unquestioned distinction: the Brazilian Ambassador, Senhor Domicio da Gama; the Argentine Minister, Señor Romulo S. Naón; and the Chilean Minister, Señor Don Eduardo Suarez Mujica. President Huerta was represented by two eminent Mexican jurists—Licenciado Emilio Rabasa and Licenciado Augustin Rodriguez, a railway magnate—Senator Luis Elguero, Rafael Elguero, Manuel Martinez del Campo, and Rafael Capetillo. The delegates of the United States were Justice Joseph Lamar and Mr. Frederick W. Lehmann. The mediators speedily discovered that the Huerta-Wilson controversy could not be settled without arranging a settlement between the warring factions in Mexico, since President Wilson's delegates were disposed to insist that Huerta must be eliminated and land reform assured. Some surprise was occasioned by the announcement that Huerta was willing to retire if a neutral provisional government could be established which the United States would recognize. The mediators elaborated a plan involving the resignation of Huerta and the establishment of a provisional government by a commission of three persons—a Huertista, a Constitutionalist, and a representative of the "A B C" mediators. This project was vetoed by General Carranza. The prospect of peace had almost disappeared when on June 12 Carranza named three delegates to plead his case: Fernando Iglesias Calderón, the Liberal leader, and two Carranza sympathizers in Washington, Luis Cabrera and José Vasconcelas. The dispute now narrowed down to one point, whether the provisional government which the conference planned to establish should be impartial, as the Huerta delegates demanded, or Constitutionalist, as the Carranzistas and the American delegates required. On June 17 the Huerta delegates issued a manifesto pointing out that a Constitutionalist provisional government would be able to interfere with electoral freedom to such an extent as to secure a Constitutionalist victory in the projected elections; if, therefore, President Wilson insisted upon establishing a Constitutionalist instead of an impartial provisional government, he would in effect be utilizing the power of the United States to impose a Constitutionalist government upon Mexico. In reply to this complaint, the American delegates declared that the only way to assure peace in Mexico was to establish a government which would be acceptable to the Constitutionalists. After much argument, the Niagara Falls Conference agreed: (1) that a provisional government should be established by agreement between the Huertista and Constitutionalist delegates; (2) that without exacting indemnity or other satisfaction for the Tampico affair, the United States should immediately recognize the projected provisional government, amnesty being granted to all foreigners, and foreign claims for damages being adjusted by international commissions; (3) and that the "A B C" Powers should likewise accord prompt recognition to the provisional government. The peace protocol was signed by the Huerta delegates on June 31, and by the Americans on the following day. The mediators then announced that the conference was suspended until further need should arise for mediatory action.

During the course of the negotiations, the *Ypiranga* had been allowed to land her cargo at Puerto Mexico, and a cargo of cartridges for the Constitutionalists had been conveyed by the steamship *Antilla* to Tampico, where two of Huertas gunboats would have intercepted it, had they not been deterred by the threatening presence of two larger American gunboats.

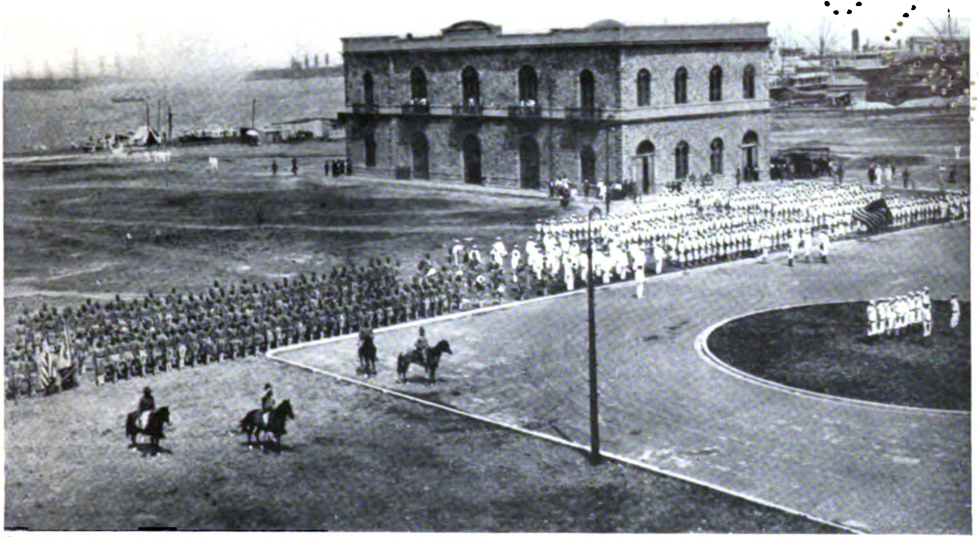
THE TORREON CONFERENCE. General Carranza informed the mediators that before he could accept their proposals for establishing a provisional government, he would be obliged to call a conference of his generals and consult their opinions. Accordingly the Constitutionalist generals were summoned to a conference at Torreon early in July. The conference refused to consider anything short of the unconditional surrender of the Huerta government. A most important feature of the Torreon meeting was the discussion of the differences between Carranza and Villa. As First Chief of the Constitutionalist forces, Carranza was nominally the superior of Villa, but as the most brilliant general of the revolutionary armies, Villa had more than once shown a sense of his own importance and a spirit of insubordination which threatened to disrupt the Constitutionalist movement. Certain of Villa's friends were repugnant to Carranza; Villa had asserted the right to issue paper money; he had confiscated large sums claimed by Carranza. These were assigned as the causes of the quarrel; but perhaps the fundamental cause lay still deeper, in the personal rivalry of the two men, and in the inherent absurdity of expecting an aristocratic land-baron like Carranza and a rough soldier-bandit like Villa to work harmoniously for the achievement of agrarian reforms. Outwardly, the breach was healed by the Torreon Conference, and Carranza was confirmed in his position as First Chief. The conference decided that directly upon becoming Provisional President, Carranza should summon the generals of the Constitutionalist armies, on the basis of one delegate for each 1000 soldiers, to a convention which would make all arrangements for elections. The conference resolved "to fight until the ex-Federal army shall disappear completely, to be supplanted by the Constitutionalist army; to establish a democratic form of government; to procure the enactment of wise laws for the protection of laborers; to effect the economic emancipation of the farmers by making an equitable distribution of the lands; as well as to adopt any resolutions which may solve the agrarian problem; to punish and exact responsibility from the Roman Catholic clergy who materially or intellectually assisted the usurper Huerta."

CONSTITUTIONALIST VICTORIES. The Torreon Conference affords a convenient point of vantage from which to survey the progress made by the Constitutionalist armies since the beginning of the year. After defeating the Federals in a hotly contested engagement at Ojinaga, Dec. 29, 1913–Jan. 11, 1914, General Villa's forces, 12,000 strong, moved southward against the important railway centre of Torreon.

Checked in its advance, March 17, General Villa's army rapidly returned to the attack, fought its way into Torreon, and after 11 days of stern fighting drove the last of General Velasco's Federal troops from the city on April 2. At General Villa's command, a number of captured Federals were shot, and six or seven hundred Spanish residents of Torreon expelled. Still southward Villa pursued Velasco's fugitive forces to San Pedro, where General Velasco, strengthened by reënforcements, turned to give battle. Over 3,000 Federals fell in the battle of San Pedro, April 9–10. Again Velasco retreated; while Villa's victorious army turned eastward toward Saltillo, in the southeastern corner of the State of Coahuila. Meanwhile Gen. Pablo Gonzales, the Constitutionalist commander in the east, had invested Tampico with 7000 men, and won a foothold in the outskirts of the town. The localities held by Gonzales's troops were bombarded by two Federal gunboats with such telling effect that an oil refinery and over 100 immense oil tanks, which happened to be located in the district under fire, were destroyed by bursting shells, while British, French, German, Spanish, and American warships played the part of passive spectators. It was during the course of the fighting at Tampico that the American bluejackets were arrested, April 9. When the "A B C" Powers proposed an armistice for mediation, April 25, the military position of the several Constitutionalist armies was so strong that the First Chief refused to suspend hostilities. The Constitutional commander in the east, Gen. Pablo Gonzales, captured Tampico on May 13. From Tampico General Gonzales marched against San Luis Potosí, 200 miles to the westward. In the extreme West, the Federal strongholds of Guaymas and Mazatlan were besieged, and Gen. Alvaro Obregon's forces captured Tepic, executing 35 captured Federal officers. San Blas, the seaport near Tepic, fell into Constitutionalist hands at the same time. From Tepic General Obregon moved against the second-largest city of the republic, Guadalajara, 140 miles to the southeast. There he won one of the greatest victories of the war, capturing 5000 prisoners, with much artillery and ammunition, and entering the city in triumph, July 9. In the meantime General Villa, who was conducting the campaign in the central part of Mexico, between General Gonzales on the east and General Obregon on the west, had captured Monterey, the capital of Nuevo Leon, on April 24. After defeating a Federal army at Paredon, he executed 32 captured Federal officers and proceeded against Saltillo. Saltillo was abandoned by the disheartened Federals without a struggle, May 21. Villa's next move was against Zacatecas, 100 miles to the west and 200 miles to the south from Saltillo. Panfilo Natera, one of Carranza's generals, had already met with disastrous failure in an attack on Zacatecas, June 10–14. But Villa was successful; according to his own report, he lost only 500 killed and 800 wounded in capturing Zacatecas, June 23, while he inflicted on the Federals a loss of 4000 killed, 2000 wounded, and 5000 captured, besides 6000 rifles and a quantity of stores.

Huerta's Resignation and Carbajal's Brief Government. Warned by the irresistible advance of the Constitutionalist armies, Gen. Victoriano Huerta began to make preparations for his departure from the capital. On July 8, Robert Esteva Ruiz, Acting Minister of Foreign Affairs, announced before the Mexican Congress that in obedience to the decree of the Niagara Falls Conference, Huerta was prepared to resign. Two days later, Chief Justice Francisco Carbajal was appointed Minister of Foreign Affairs; Salome Botello, Minister of Commerce and Industry; Arturo Alvaradejo, Minister of Communications; Carlos Rincon Gallardo, Minister of Agriculture. On July 15 Victoriano Huerta resigned the presidency, and a few hours later Francisco Carbajal took office as Provisional President, while Huerta began a journey which brought him ultimately to Spain. Carbajal closed all gambling places and liberated all political prisoners in the Federal district. He notified the authorities at Washington that his only desire was for peace, with (1) a general amnesty, (2) protection of the property of all classes, and (3) protection of lives. On July 20, Secretary Bryan announced that the United States would not recognize any loans or concessions contracted by Huerta since the *coup d'état* of Oct. 10, 1913. Carranza was not inclined to allow Carbajal's conditions, and the Constitutionalist armies pressed forward with exultant confidence to capture San Luis Potosí, July 17; Guaymas, July 18; Aguascalientes, July 22; Colima, July 23; Manzanillo, July 24; Guanajuato, July 28; Queretaro, July 31; Pachuca, Toluca, and Morelia, August 9–10; and Mazatlan, August 10. In the last-mentioned city, 15 captured Federal officers were executed. At last on August 13 a protocol was signed arranging for the peaceful capitulation of Mexico City. On August 15 General Obregon rode into Mexico City at the head of 15,000 men. Carranza's triumphal entry was made on August 20. Villa's day was yet to come.

Villa's Revolt Against the Carranza Government. Although Carranza's entry into Mexico City had been effected without disorder, yet in a few days serious rioting and insurrection broke out in the capital, and Carranza embarked upon a career of arbitrary government in comparison with which the violent deeds of the exiled dictator paled into insignificance. On September 7 General Carranza issued a decree setting aside the restrictions on arbitrary arrest and confiscation of property. In the middle of September it was stated that over 1000 persons had been imprisoned in the penitentiaries for political reasons. Numerous executions were of no avail to prevent recurring mutinies. Zapata, the famous bandit leader, who had at first made peace with Carranza, in September resumed his lawless activities in the neighborhood of the capital, because the First Chief of the Constitutionalists would not carry out agrarian reforms according to Zapata's ideas as embodied in the "plan of Ayula." A counter-revolution against Carranza had been started in July at Aguascalientes by Gen. Pascual Orozco with 4000 followers. Late in August another counter-revolutionary movement was inaugurated near Puebla by some 20,000 former Federal soldiers under the leadership of Generals Almazan, Aguilar, and Argumedo; heavy fighting occurred in Puebla in September. In Sonora, moreover, the Constitutionalists had fallen to fighting among themselves, and it was necessary for Villa and Obregon to intervene to maintain Governor Maytorena's authority



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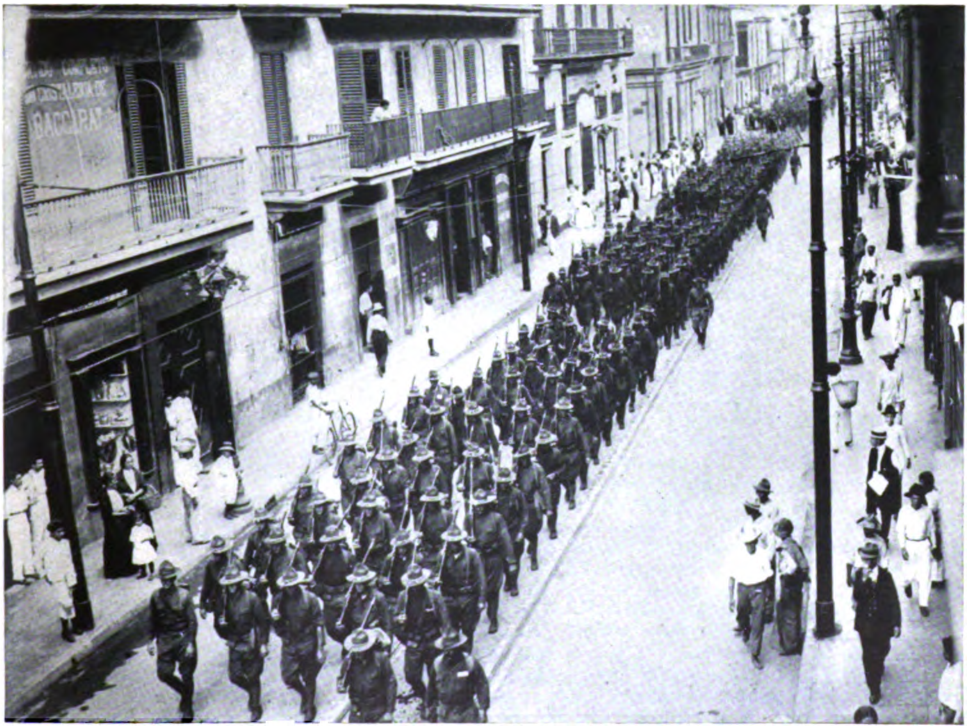
THE AMERICAN NAVY TURNING OVER THE CITY OF VERA CRUZ TO THE ARMY



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AMERICAN SOLDIERS MARCHING ALONG THE MAIN STREET OF VERA CRUZ

AMERICAN OCCUPATION OF VERA CRUZ

against General Hill. But most discouraging of all was the dissension between Francisco Villa, Constitutionalist general in the North, and Venustiano Carranza, First Chief of the Constitutionalist forces. Villa's pride had been hurt by the fact that Obregon and Carranza had enjoyed the triumph of entering Mexico City as victors; Villa no doubt feared that Carranza would attempt to resign the provisional presidency in order to be eligible for election to the presidency; and Carranza had given just cause for discontent by inviting civil governors as well as military leaders to the convention, which, the Torreon Conference had agreed, was to be composed of military leaders exclusively. When Paul Fuller, as a personal emissary of President Wilson, visited Carranza in Mexico City on September 5 and hurried north to confer with Villa, some commentators believed that President Wilson was attempting to prevent a split. On September 9, however, President Wilson lifted the embargo on arms, which had been restored at the time of the occupation of Vera Cruz, and had remained in effect since April 21. Lifting the embargo at this juncture naturally favored Villa, who controlled the territory in contiguity with the United States. On September 15 the United States promised to withdraw its troops from Vera Cruz. Carranza was warned that in case of a split in the Constitutionalist ranks, the United States would adopt a neutral attitude. The long-threatened break came on September 23, when Villa declared war on Carranza. It was explained that Villa had arrested General Obregon after a heated dispute; Carranza, fearing trouble, had suspended railway service in Villa's territory; and Villa had replied with defiance. In the State of Sonora civil war broke out afresh, with Villa's friend, Governor Maytorena, arrayed against General Hill, who was closely besieged in the border town of Naco. Villa declared that he would not make peace unless Carranza was eliminated from candidacy for public office.

Carranza Against the Convention. The conference of military delegates, one for each 1000 soldiers, which had been called to meet at Mexico City on October 1 for the purpose of arranging for elections, was necessarily rendered impossible by the Villa revolt against Carranza. The loyal military delegates, who came from the southern armies, and the provincial governors, whom Carranza had invited, held a brief session in Mexico City, and rejected Carranza's proffered resignation. A Peace Conference was then convened at Aguascalientes, October 10, and an armistice declared. In effect, the Peace Conference was none other than the convention for which the Torreon Conference had stipulated, containing one military delegate for each 1000 Constitutionalist soldiers. The convention arrogated to itself supreme power and sovereignty, and appointed a committee of five to take charge of foreign relations, war, justice, education, and finance. From the outset it was clear that Carranza was in disfavor. Gen. Eduardo Hay urgently demanded that Carranza should release his political prisoners. The party opposed to Carranza was greatly strengthened when on October 22 Zapata sent 28 delegates, who combined with Villa's following to dominate the convention. On October 25 Carranza issued a manifesto attempting to refute by *tu quoque* arguments the charges which Villa had preferred against him. Each accused the other of inordinate personal ambition, of flagrant violation of the constitutional rights of citizens, of illegal executions, of barbarous attacks on the clergy, of the murder of foreigners. Carranza's agents at Washington, it may be noted in this connection, continued to heap abuse on Villa, alleging that Villa's real name was Dorotea Aranga, and that he was receiving active support from the Guggenheim and other interests which hoped to secure concessions in Mexico. Villa was likewise arraigned by General Obregon on charges of violence, immorality, dishonesty, and intrigue. To return to the convention, on October 27 General Carranza offered to resign on condition that Villa and Zapata would retire into private life. On October 30, the convention decreed the retirement of both Carranza and Villa, and on November 2 elected as Provisional President for 20 days Gen. Eulalio Gutierrez, an ex-grocer who had become a prominent leader in the revolution. Carranza, refusing to accept the decree of the convention, established himself at Puebla and prepared for trouble. On November 6, General Villa offered to resign his command if that were necessary to eliminate Carranza. On November 8 the convention served an ultimatum on the First Chief, giving him until 6 P. M., November 10, to make his submission. Again he defied the convention. Gutierrez took office as Provisional President on November 10. On the following day General Villa in the name of the convention and in behalf of Gutierrez, opened hostilities against Carranza in a battle at León, south of Aguascalientes. Secretary Bryan chose this moment to announce, on November 13, that inasmuch as both factions had given the necessary guarantees—that taxes and customs duties collected by American officials would not be recollected, and that the safety of foreigners, clergy, and refugees in Vera Cruz would be assured—the United States troops would evacuate Vera Cruz on November 23. The 4000 American regulars and 2600 marines were accordingly withdrawn, and the Constitutionalist Gen. Candido Aguilar took possession of Vera Cruz with some 4000 men, November 23. General Carranza had offered to go into voluntary exile at Havana before November 25, if Villa would do likewise. But Villa was not at that moment meditating self-imposed exile. His armies were occupying Irapuato, Guanajuato, and Queretaro (November 18). Ten thousand Villista troops under the leadership of Gen. Felipe Angeles attempted unsuccessfully to wrest Guadalajara from the Carranzistas, November 24. On November 24 the Carranzista forces were withdrawn from Mexico City, leaving the capital a prey to the Zapatista bandits, who at once took possession of the city, and, it was alleged, robbed and murdered a number of Spaniards. General Villa joined Zapata in Mexico City on December 1. Two days later Provisional President Gutierrez was installed in the National Palace. Gutierrez had formed his cabinet in November as follows: foreign affairs, Fernando Iglesias Calderon; communications, Manuel Bonilla; war, José I. Robles; interior, De Silva; public works, José Vasconcelos; justice, Francisco Escudero; *Fomento*, Antonio Díaz Soto; treasury, Miguel Díaz Lombardo. Places in the cabinet were now given to two Zapatistas, so that the cabinet at the close of the year was organized as follows: foreign relations, José Ortiz Rodriguez; war, Gen. José I. Robles; finance, F. F. Villareal; public works, Valentin Gama; education, José Vasconcelos; communications, José R. Cabo; agriculture, Gen. Manual Palafoz. Meanwhile General Carranza, General Obregon, and General Alvarado had entered Vera Cruz, November 26, and made that city their headquarters. Carranza claimed dictatorial powers. Late in December the Conventionists boasted that in a great battle in the vicinity of Puebla, Generals Zapata and Angeles had inflicted a crushing defeat upon 20,000 Carranzista troops. The Conventionists also claimed Saltillo and Monterey. But the Carranzistas flatly contradicted the reports of their reverses. At the close of the year, then, the issue was undecided between Carranza, who with his loyal generals, Obregon, Gonzales, and Alvarado, controlled most of Southern and Eastern Mexico, and Villa, who dominated the Gutierrez government and controlled practically all of Mexico north of a line drawn from Matamoras on the eastern coast to Mazatlan on the western coast. In addition to the other minor insurrections which complicated the situation, a new rebellion was started in central Chihuahua by the former Federal Generals José Ynez Salazar and Emilio Campa. General Huerta, however, showed no intention of mixing in Mexican affairs again; from Barcelona, Spain, where he was living in modest retirement, the former Provisional President emphatically repudiated the allegation that he had offered to aid either "Villa, the jailbird," "Zapata, the bandit," or "Carranza, the four-flusher." One of the most unfortunate features of the Constitutionalist régime was the frequency of political executions. In the middle of December the Gutierrez government declared that it would henceforth execute no one without trial, and repudiated as unauthorized the numerous executions which had already taken place. Nevertheless a great number of executions were reported in Northern Mexico in the territory under Villa's sway. A hundred and forty persons were said to have been executed at Chihuahua City in one month, and 16 in one week in Mexico City. Another distressing circumstance was the conflict in the border town of Naco, where besieged Carranzistas and besieging Villistas were guilty of continual carelessness in allowing stray shots to inflict damage on the American side of the international frontier, much to the annoyance of the United States government.

THE CONSTITUTIONALISTS AND THE CLERGY. Alleging that the clergy had been unfavorable to the Constitutionalist revolution, the Constitutionalist leaders conducted a violent campaign against the Roman Catholic Church in Mexico. On July 27, for example, Antonio I. Villareal, as Constitutionalist Governor and military commander of the State of Nuevo León, forbade confession, ordered the expulsion of Jesuits and foreign priests, and prohibited the ringing of church bells except for patriotic celebrations and Constitutionalist victories. The Constitutionalist Governor of Chiapas not only prohibited confession, but forbade priests to celebrate more than one mass a week, ordered priests to dress as ordinary civilians, and closed all convents. In other cases, priests were compelled to ransom their lives. But the Constitutionalist soldiers sometimes went even further. They confiscated and desecrated churches and subjected nuns to insult and outrage. If the Catholics resisted, they were summarily punished, and the leaders shot. To the Archbishop of Mexico and the hundreds of priests who had been expelled from Mexico, Pope Benedict XV on October 25 addressed a letter expressing the hope that their wrongs would be righted in the future; he also sent money to relieve their distress, regretting that his poverty did not permit him to send more.

MEZES, SIDNEY EDWARD. American educator, chosen in 1914 president of the College of the City of New York. He was born at Belloment, Cal., in 1863, and graduated from the University of California with the degree of bachelor of science in 1884, afterwards taking post-graduate work at Harvard University, receiving the degree of A.B. in 1890, A.M. in 1891, and Ph.D. in 1893. From Harvard he went almost immediately to Austin, Texas, to become adjunct professor of philosophy at the University of Texas. He served in this position from 1894 to 1897, as associate professor until 1900, as full professor until 1908, as dean from 1902 to 1908, and as president of the university from 1908 to 1914. His administration of the University of Texas was very successful, and in addition to his abilities as administrator, he became favorably known as a teacher and as one of the foremost scholars in philosophy and ethics. Dr. Mezes was chosen after a search of over a year for a man qualified to take the place of John H. Finley, who resigned as president of the College of the City of New York to become State Commissioner of Education. His published writings include: *The Conception of God* (part author, 1897); *Ethics, Descriptive and Explanatory* (1901); and articles on philosophy, ethics, and education, contributed to reviews.

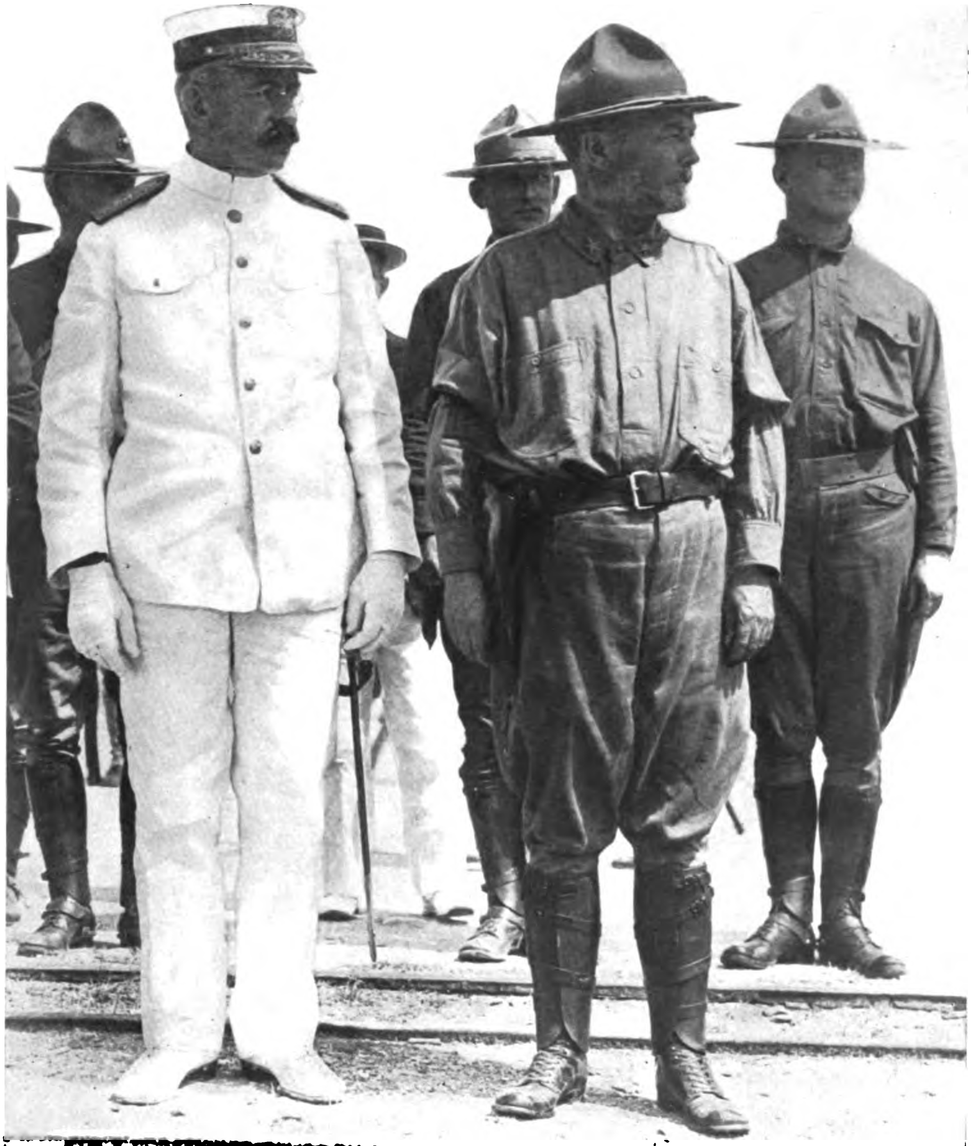
MIAMI UNIVERSITY. An institution for higher education, founded at Oxford, Ohio, in 1809. The enrollment in all departments in the autumn of 1914 was 643, of which 381 were in the College of Liberal Arts and 262 in the Normal College. The faculty numbered 48. There were no noteworthy changes in the faculty during the year and no notable gifts were received. The productive funds amount to about $110,000 and the income to about $250,000. The library contains about 45,000 volumes. The president is Raymond M. Hughes.

MICHIGAN. POPULATION. The estimated population on July 1, 1914, was 2,976,030. The population in 1910 was 2,810,173.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	1,750,000	63,000,000	$42,210,000
	1913	1,675,000	56,112,000	37,595,000
Wheat	1914	879,000	17,316,000	17,835,000
	1913	835,000	12,776,000	11,371,000
Oats	1914	1,515,000	50,752,000	22,838,000
	1913	1,500,000	45,000,000	17,550,000
Rye	1914	371,000	5,936,000	5,402,000
	1913	375,000	5,362,000	3,324,000
Barley	1914	90,000	2,340,000	1,521,000
	1913	85,000	2,108,000	1,265,000
Potatoes	1914	364,000	44,044,000	13,213,000
	1913	350,000	33,600,000	17,808,000
Hay	1914	2,352,000	*a* 3,011,000	36,132,000
	1913	2,400,000	2,520,000	33,012,000

a Tons.



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ADMIRAL FLETCHER AND GENERAL FUNSTON
VIEWING THE PREPARATIONS OF THE UNITED STATES TROOPS TO CAMP ON THE OUTSKIRTS OF VERA CRUZ

AMERICAN OCCUPATION OF VERA CRUZ

Mineral Production. Michigan ranked eighth among the States in 1913 in the value of its mineral production. It owes this prominence as a mining State to two metals—iron and copper. In the production of iron ore the State ranks second, being surpassed only by Minnesota, and in the production of copper fourth, being surpassed only by Arizona, Utah, and Montana. As a result of labor troubles in the copper districts of the State during 1913, the output of the year was barely 60 per cent of that for 1912, the recoverable contents of the ores mined in the former year being estimated at 135,853,409 pounds, with a value of $21,057,278. The production in 1912 was 218,138,408 pounds, valued at $35,992,837. The production of iron ore, on the other hand, was uninterrupted by labor troubles and decreased only slightly, from 12,797,468 long tons in 1912, to 12,668,560 tons in 1913, while the value showed a decided gain from $29,003,163 to $33,479,954. The increase in the value of the iron ore was, however, less than one-third the decrease in the value of copper. A considerable quantity of coal is mined, and the production in 1913 was 1,231,786 short tons, valued at $2,455,227, an increase over 1913 of 25,556 tons in quantity and $55,776 in value. The production of coal in the State in 1914 was about the same as in 1913. There were no strikes during the year, and labor and transportation facilities were unusually good. Michigan is among the important States in the manufacture of cement. The production in 1913 showed a substantial increase over that of 1912. In the former year it was 4,081,481 barrels, valued at $4,228,879, and in the latter year 3,651,094 barrels, valued at $3,145,001. In the quantity and value of salt produced Michigan ranks first. The production in 1913 (exclusive of rock salt) amounted to 10,829,307 barrels, valued at $3,054,532, compared with 10,271,715 barrels, valued at $2,743,389 in 1912. Other commercial mineral products of the State are coke, clay products, gypsum, sand and gravel, limestone, gems, graphite, mineral waters, quartz, petroleum, and silver. The total value of the mineral products in 1913 was $72,143,211, compared with $80,062,486 in 1912.

Education. The total school population of the State in 1913 was 815,849. The total enrollment in the public schools was 595,725, and the average daily attendance was 486,013. The female teachers numbered 16,643 and the male 2857. The average monthly salary of male teachers was $83.18 and of female teachers $56.50. The total amount paid for teachers' wages in 1913 was $10,539,963. The per capita cost per year was $23.02.

Transportation. The mileage of single-track railroad in the State on June 30, 1914, was 8898.89. There were in addition 718 miles of second, third, and fourth track. A new line, the Boyne City, Gaylord, and Alpena Railroad, opened for operation on December 7. This line is 30 miles long, running from Gaylord to Atlanta. The Michigan Railroad during the year was purchased by the Michigan Railway Company and was changed to an electric road. This company put in operation during the year a third-rail line from Bay City to Saginaw. A few other less important railways added mileage to their tracks. The mileage of interurban and suburban electric railways on June 30, 1914, was 702 and that of city lines was 205.

Finance. The report of the State Treasurer shows total receipts for the fiscal year ending June 30, 1912, of $17,133,162, and disbursements of $16,211,285. At the beginning of the fiscal year there was on hand a balance of $9,249,408, and at the end a balance of $10,171,285. The funded debt of the State consists in special debt obligations to public trust funds, these funds being derived from the sale of all lands given by the United States to the State for educational purposes. On June 30, 1913, this debt amounted to $6,896,212. There was in addition on the same date a floating debt of $192,880, composed of private trust funds in the form of various deposits. The per capita debt in 1913 was $2.41.

Charities and Corrections. The charitable and correctional institutions under the control of the State Board of Corrections and Charities are the Kalamazoo State Hospital, the Pontiac State Hospital, the Traverse City State Hospital, Newberry State Hospital, Ionia State Hospital, State Psychopathic Hospital, Home for Feeble-minded and Epileptic; Michigan State Prison, Michigan Reformatory, Branch Prison, Industrial School for Boys, Industrial School for Girls, State Public School, School for the Blind, Employment Institute for the Blind, School for the Deaf, Michigan Soldiers' Home, and the State Sanatorium. The total expenditures for these institutions amounts to about $2,900,000 yearly.

Politics and Government. The State Legislature did not meet in 1914 as the sessions are biennial and the last was held in 1913. Elections were held for Governor and representatives to Congress. Governor Woodbridge N. Ferris, Democrat, was reëlected by a plurality of 35.80 per cent over Chase S. Osborn, Republican. The Republicans elected the balance of the State ticket by pluralities which averaged 74,955. The Legislature elected on the same day stands: Senate—Republicans, 29; Democrats, 3. House—Republicans, 127; Democrats, 5.

Democratic Congressmen were elected in the first and second districts. Republican Congressmen were elected in the other 11 districts, the National Progressives losing to the Republicans the tenth and twelfth districts which they carried in 1912.

The average Democratic vote for State candidates, Governor excepted, in 1914, was 6404 more than the Democratic vote for President in 1912. The average vote for the Republican State candidates, Governor excepted, was 42,780 more than the Republican candidate for President received in 1912. The National Progressive vote for their State ticket in 1914 was 134,352 less than in 1912. The total vote of the State in 1914 was 110,332 less than in 1912.

At the municipal and township elections in April, 1914, there was voting on the question of liquor licenses or no liquor licenses in 12 counties. Two of these counties changed from wet to dry and two from dry to wet, there being no change in the other eight. There are now 34 counties that are dry under the local option act and 49 that are wet. Counties can vote only at the April election to be wet or dry. There were serious labor troubles throughout the year in the copper districts of the State. (These will be found discussed in the article Strikes.) On January 28 a "blue sky" law regulating corporations, passed by the Legislature in 1913, was declared invalid by the Federal Court of the Eastern District of Michigan.

STATE GOVERNMENT. Governor, Woodbridge N. Ferris; Lieutenant-Governor, Luren D. Dickinson; Secretary of State, Coleman C. Vaughan; Treasurer, John W. Haarer; Auditor-General, Oramel B. Fuller; Attorney-General, Grant Fellows; Adjutant-General, ————; Superintendent of Public Instruction, F. L. Keeler; Commissioner of Insurance, John T. Winship—all Republicans, except Ferris and Winship.

JUDICIARY. Supreme Court: Chief Justice, Flavius L. Brooke; Justices, Aaron V. McAlray, John W. Stone, Franz C. Kuhn, Russell C. Ostrander, John E. Bird, Joseph B. Moore, Joseph H. Steere; Clerk, Charles C. Hopkins—all Republicans.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	29	127	156
Democrats	3	5	8
Republican majority	26	122	148

The representatives in Congress will be found under the section *Congress*, article UNITED STATES.

MICHIGAN, UNIVERSITY OF. A State institution for higher education, founded at Ann Arbor, Mich., in 1837. The enrollment in all departments of the university in the autumn of 1914 was 5522, divided as follows: academic, 2582; dentistry, 318; nonprofessional graduate school, 258; law, 499; medicine and surgery, 304; homœopathic medical college, 74; pharmacy, 110; engineering and architecture, 1492. During the summer session of 1914 there was an enrollment of 1594, making the total enrollment, with a deduction of 50 per cent for double registration in 1914, 6319. There were in addition 309 students enrolled in extension courses. These are regular courses given by members of the faculty on Saturday to teachers in Detroit and Saginaw public schools. The total number of university officers and faculty in 1914 was 535, including 30 nonresident lecturers and summer session appointees from other universities and colleges; 128 graduate assistants, and 23 administrative officials not elsewhere included. The productive funds of the university on June 30, 1914, were $940,284, and the total income for 1913–14, including a balance of $73,484 in July, 1913, was $2,276,344. The library contains about 340,000 volumes. The president is Harry B. Hutchins.

MILBANK, JOSEPH. An American banker and philanthropist, died Sept. 7, 1914. He was born in New York City in 1848, the son of Jeremiah Milbank, who amassed a large fortune and organized and built the Chicago, Milwaukee, and St. Paul Railroad. As a comparatively young man Joseph Milbank became a director of this road and became connected with other important railroad enterprises. He was chiefly known, however, as a philanthropist. His first gift of magnitude was to the Teachers College in New York City, for which he erected a building known as Milbank Hall in memory of his father and mother. In 1905 he gave $300,000 to the First Congregational Church of Jersey City for the erection and equipment of the People's Palace in that city. He gave large sums for charitable purposes, but these were distributed chiefly through religious agencies.

MILITANT TACTICS. See FEMINISM, and WOMAN SUFFRAGE.

MILITARISM. See SOCIALISM.

MILITARY AËRONAUTICS. See AËRONAUTICS.

MILITARY PROGRESS. THE WAR IN EUROPE. To this colossal contest, which had been in active progress for some five months, students of military science and art naturally looked at the end of 1914 for applications of all modern means and resources relating to warfare. Undoubtedly in this time sufficient experience had already been had to furnish forth a body of doctrine under this head. Unfortunately there had been great difficulty in getting trustworthy news, and this because of the rigor of the censorship imposed. Indeed it may be said that this censorship was itself a marked feature of the present conflict. Foreshadowed in the Russo-Japanese War, it had by 1914 received universal application, and might be expected to prove the rule in future contests. Related to this matter was the disappearance of the war-correspondent: he simply ceased to exist at the front.

Recalling here the operations that have taken place in the East and in the West, two great facts stand out:

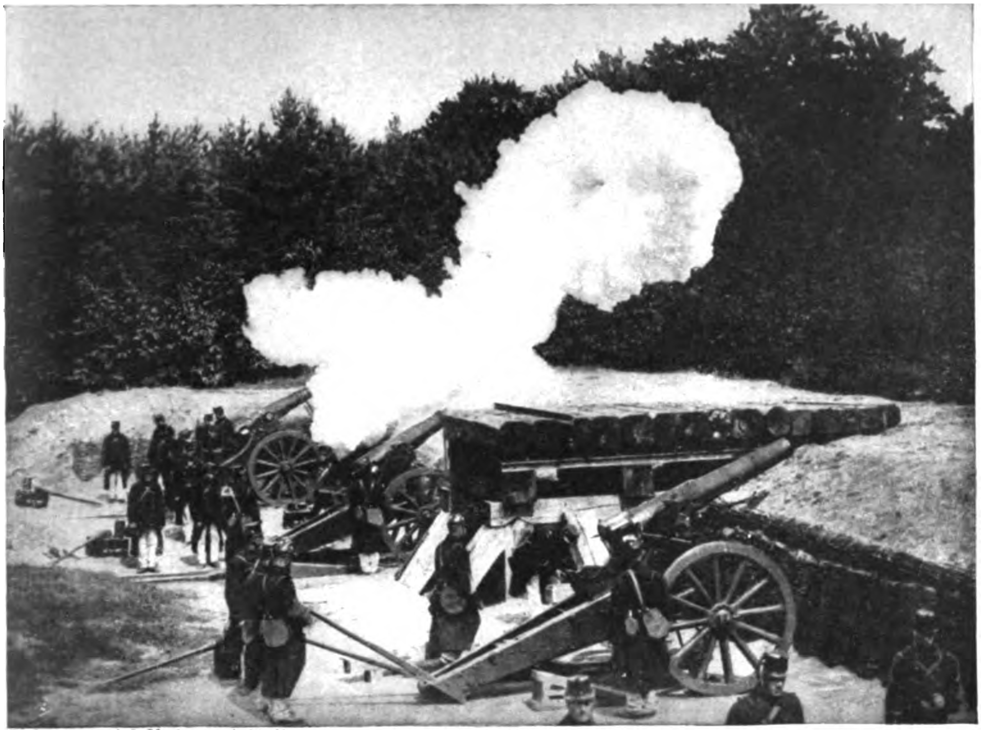
(1) The enormous numbers engaged; hence, necessarily,

(2) the enormous extension of continuous battle lines.

Never before in the recorded history of mankind have the numbers engaged been so great, the combat fronts so long. In respect of these matters, the expected happened. Military critics of the opening months of the war have to deal with certain features that have developed during the operations of 1914, and in so doing must distinguish between those of the two fronts.

Great numbers make excessive demands upon the service of transportation. Accordingly not only have the railroads been called upon, but motor transportation has been extensively used for the carriage of men and supplies. In these campaigns we shall probably discover that railways have not only strategic but tactical functions, and on a scale never before attained. Motor transport calls for no special remark, save that its use had long been foreseen and preparation made accordingly. The Western theatre with its many excellent roads naturally lent itself to this mode of conveying men and supplies. Powerful trucks were used to haul heavy guns and some automobiles were even so equipped with curved rods and a cutting edge in front, that they could, as it were, charge a barbed-wire entanglement or obstacle, cut through it and deflect the separated wires to the sides. More novel was the use of armored motor cars, carrying rapid-fire guns. More novel yet were motor batteries. According to the early press reports, these, of Austrian origin, consisted of 30.5 centimeter (12-inch) mortars, firing a shell weighing 385 kilograms and transported by 100-horsepower motor lorries on three trail wagons. It was said that these motor batteries were used at the siege of Namur and at Maubeuge.

The conflict in the West early took on a singular aspect. Checked on the Marne, and pushed back to the Aisne, the Germans successfully resisted every effort of the Allies to turn their right. The result at the end of 1914 was



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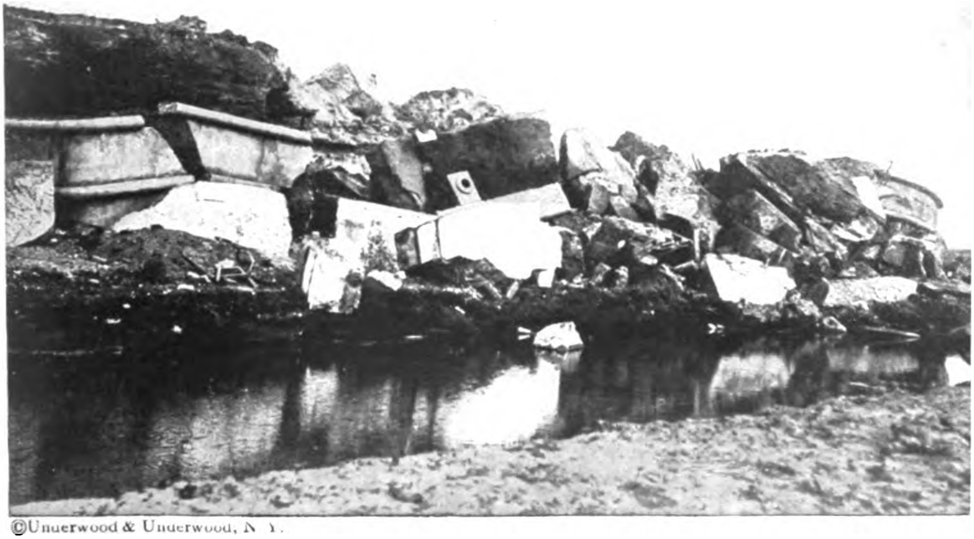
A BELGIAN BATTERY OF HOWITZERS ON THE FIRING LINE IN FLANDERS



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A FRENCH TURRET FORT AFTER THE FIRE OF THE GERMAN 42-CENTIMETER ARTILLERY

SCENES FROM THE GREAT WAR

two armies at grips on a line over 250 miles long, and neither able to secure any significant advantage over the other. Both sides were most strongly entrenched, the lines at some points being only a few yards apart. So even was the struggle, up to this time, that an advance of a very few hundred yards, the capture of a few yards of trench, were regarded as successes of consequence. Each army was, as it were, besieging the other. Naturally in a conflict of this sort, resort was had, as was the case at Port Arthur, to mining and countermining. Machine guns and artillery played, and continued to play, a great part. In fact the contest may be said early to have become one of artillery, and the critic is forced to await the official reports before the influence of these elements can exactly be measured. At the end of the year it was known, however, or believed to have been known, that the French 75-millimeter gun had proved a most superior piece and that it was admirably handled. These results were expected. There seemed to be no doubt, however, that in the matter of heavy guns to accompany the armies in the field, the French were at the outset of the war overmatched by the Germans. These sprung a surprise not only on their adversaries but on the entire world, in their heavy artillery, or, more accurately, howitzers. If we were to believe the news persistently laid before the public, the largest of these howitzers had a calibre of not less than 42 centimeters, or nearly 16.5 inches. This piece, so it was reported, was used in reducing Liége, Maubeuge, and Antwerp, and under its fire, works that had been supposed to be able to hold out for weeks if not for months, fell in as many days. The strongest steel and concrete forts crumbled under its attack. According to some, this piece was of Austrian manufacture. The difficulties of transporting it with its ammunition though great are not insuperable. Motor transport, of course, was employed wherever possible; when this was not available as many as 40 horses were reported to have been used. This piece, if it was really brought into service, casts into the shade the employment of smaller calibres such as the 11-inch, itself no mean achievement. According to newspaper reports, the balance in the matter of heavy pieces at the end of the year was by way of being restored. The French had, or were soon to have, a 105-millimeter piece, and the English a 15-inch howitzer. If heavier or other pieces were to be furnished, no news of them had been allowed to reach the outer world. But it was only logical to assume that the Allies must devise some way of opposing the very effective heavy German guns.

The success of the German attack on permanent fortifications involved a thorough overhauling of the entire subject: the gun had proved more powerful than the fort. The textbooks required to be rewritten, as an entirely new point of view had been established.

The question may well be asked how it was that after five months' fighting no decisive results had been obtained in the West; in other words, how it could be that two gigantic armies should come to a state of deadlock. And especially is this question pertinent in view of the fact that at the outset one of the antagonists had the advantage of the offensive and had apparently almost gained his objective. There can in our opinion be but one answer to this question: the introduction into warfare of air-scouting. Memorable as, for many reasons, this war will ever be, it will be especially notable as the first in which air-scouting was called upon to exert a dominating influence on operations. Hence surprises have proved impossible: if any concentration of troops or other preparation was made for assault or attack or operation at any particular point or region, warning was at once given to the opposing army by its air-scouts. Not only this, but the movements of troops at a distance, even great, could be and undoubtedly were reported, and their purpose neutralized almost before undertaken. Air-scouting, also, proved of especial value to the opposing artilleries in designating targets, making known the range, and correcting the fire.

Of the offensive employment of air craft, that is of their use to drop bombs or other projectiles, much less may be said. This is due partly to the censorship already mentioned, which could more easily conceal such employment than scouting proper; partly to the fact that the offensive use of air craft, and especially of the aëroplane, has been comparatively neglected; but mostly we imagine to the far greater value of air craft as instruments of reconnoissance than of destruction.

On the outbreak of the war air raids were undertaken by the French over German territory, but without result. Similarly the frequent flights made by the Germans over Paris, etc., have amounted to nothing. Greater success apparently befell the English, whose aviators were reported to have destroyed portions of the German establishments at Düsseldorf and Friedrichshafen. Some aëroplanes used a cannelured steel dart about 6 inches long; in other words, undertook to shoot arrows. It was found that these, when dropped from a considerable height, would penetrate a pine plank an inch thick; hence, they might conceivably be efficacious against troops in mass, especially cavalry.

Up to the end of 1914 the war had proved the value of the aëroplane rather than of the airship (Zeppelin, etc.), and in reconnoissance rather than in offense. Mr. Henry Woodhouse in *Flying* of September, 1914, made the following estimate of the strength in air craft of the chief nations engaged:

France: Aëroplanes, 1200 military, 500 added since by acquisition of private machines and output of factories. Dirigibles, 12 of close to 400 feet in length; 14 of less than 300 feet in length; 5 privately owned, or 31 altogether.

Germany: Aëroplanes, 600 military, 400 added since by acquisition and output of factories. Dirigibles, 12 *Zeppelins* of from 350 to 490 feet long; 23 dirigibles of other types, including those privately owned.

Russia: Aëroplanes, 800 military, 150 added since. Dirigibles, 16 of different types, but mostly under 250 feet in length.

England: 200 seaplanes; 300 army aëroplanes; 300 added since. Dirigibles, 15, mostly new, up-to-date machines acquired in the past 12 months.

Austria: Aëroplanes, 350, of which all but 100 have been acquired since the beginning of hostilities. Dirigibles, 10, mostly under 300 feet in length.

Belgium: Aëroplanes, 40, and 40 acquired since the beginning of hostilities. Dirigibles, 2, one medium size, and one small.

Servia: Aëroplanes, 40; dirigibles none.

With the war in progress the British had cause to regret their persistent neglect of Lord Roberts's advice. Had they at the outbreak of the war been able to cross the Channel with 500,000 men, the war in the West would probably have been over. As it was, they were reported to have enlisted far more than 1,000,000 men, and to be endeavoring to train this enormous number to take the field in the spring of the year 1915. This particular task was made all the more difficult by the lack of officers competent to take charge. The mortality among the British officers at the front was very great, and the same may be said of the Germans and the French. Up to the end of 1914 the casualties of all sorts killed, wounded, and prisoners, of all the combatants are not far from 2,000,000; prisoners, of course, make up by far the greater part of this number. It was reported that the mortality from wounds is very low; the lowest that had ever occurred. Exact figures, however, can no more be given under these heads than under any other concerning the war at the time set for the period under review.

Of the theatre of war in the East, the news during the year was meagre and untrustworthy. Such reports as were furnished by the combatants themselves were not infrequently contradictory. However, it could be asserted of the operations in this quarter, that they were more old-fashioned, if that word be permissible, than those in the West. Railways were fewer; roads fewer and poorer: hence the deadlock characteristic of the struggle in the West had not yet occurred in 1914; there had been a wider field for strategy. The numbers engaged were, like those in the West, enormous, and therefore the fronts occupied much extended.

As already intimated, only approximate statements are possible with regard to the details of this war. In conclusion, a few remarks of a general character are, however, warranted. The war proved in some respects one of contrasts. The conception of two armies in the field each besieging the other was, in Europe at least, novel. The earliest example of this type of contest is furnished by Lee's and Grant's armies in the lines around Petersburg in 1864–65. The resulting processes necessarily were well known. For example, the bayonet was most efficaciously called into action, though it was not so many years ago that its abandonment was recommended by certain authorities. At the end of the year it was admitted that this war bids fair to be of long duration, thus contradicting the assertion so freely made in past years that all future wars would necessarily be short. The change in the assumed national traits of the French and the Germans deserves passing notice. The French exhibited strength on the defense not popularly expected of them. Fifty years earlier a retreat like that from Belgium to the Marne might have spelled final disaster. The Germans showed an ardor, a spirit, in the attack not usually assumed of them as a quiet, more or less plodding people. The two sides seemed to have exchanged qualities, without any loss of their traditional qualities. The matter is easily explained; the Germans have for years been trained in the belief that the assault carried through, no matter how costly, was the best if not the only way to achieve victory. The French, since 1870, have been schooled in the great need of steadiness, and of patience.

Lastly, the great principle that victory comes from the conclusive defeat of the hostile armies, rather than from the capture of towns, fortresses, capitals, or provinces, early received full recognition.

UNITED STATES

MEXICAN RELATIONS. In the United States, a state of peace reigned during 1914. Vera Cruz, to be sure, was occupied by American forces on April 28, 1914, and evacuated by them about December 1, but this occupation led to no hostilities. The Mexican situation in general, however, continued to cause the administration anxiety, but to the end of the year led to no breach of peace. The entire Mexican border, 1703 miles, from Brownsville, Texas, to the neighborhood of San Diego, Cal., was observed and patrolled; on this duty over 20,000 men have been employed. Local conditions in the coal regions of Colorado necessitated the dispatch of United States troops to that State in April. United States troops were also sent, in September, to Butte, Mont., and in November to Fort Smith, Ark., to check local troubles of a serious character. On account of the pressing necessity for them elsewhere, the troops guarding the National parks have been withdrawn.

ABANDONMENT OF USELESS POSTS. No progress was made in relieving the United States War Department of the burden of maintaining isolated and useless posts. However important these, or some of these, may have been in times past, they are of no importance now. On the contrary, in so far as they prevent the proper concentration of troop units, they are hurtful. In spite of this fact, which ought to dominate the situation, local interests have proved to be more powerful than national interests, and Congress so far has admitted no remedial legislation.

NATIONAL DEFENSE. The European War has naturally directed attention to the question of national defense. A demand accordingly arose for an investigation of resources, with a view to correcting defects, and to setting in order the house of the American people against a possible day of trouble. Far as was this demand from connoting any intention of militarizing the nation, of converting the country into a military camp, yet it raised a loud protest in certain quarters. It was believed, however, that this protest would be in vain, and that common sense would be found ultimately to control the matter. The Chief of Staff [General Wotherspoon], in his report, recommended an army of 500,000 men, 205,000 to constitute the standing army proper, and the remainder the reserve. The Secretary of War's recommendation of what should be immediately done, "is to fill up the existing organizations . . . to their full strength. This would require 250,000 men. In addition . . . we should be authorized to obtain 1000 more officers." The Volunteer Army Bill passed the Senate April 20, 1914; it had passed the House Dec. 13, 1913. It provides for raising volunteer forces of the United States in time of actual or threatened war, and was regarded by the Secretary of War "as the most important piece of military legislation which has been dealt with by Congress for many years past." The question of proper cavalry organization was still be-

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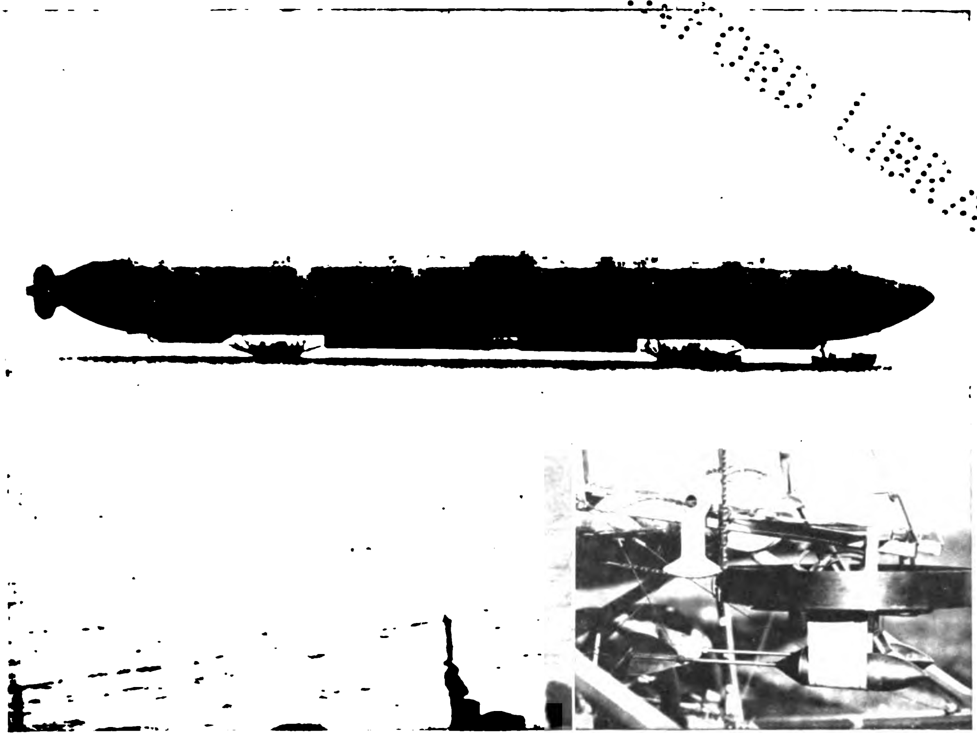

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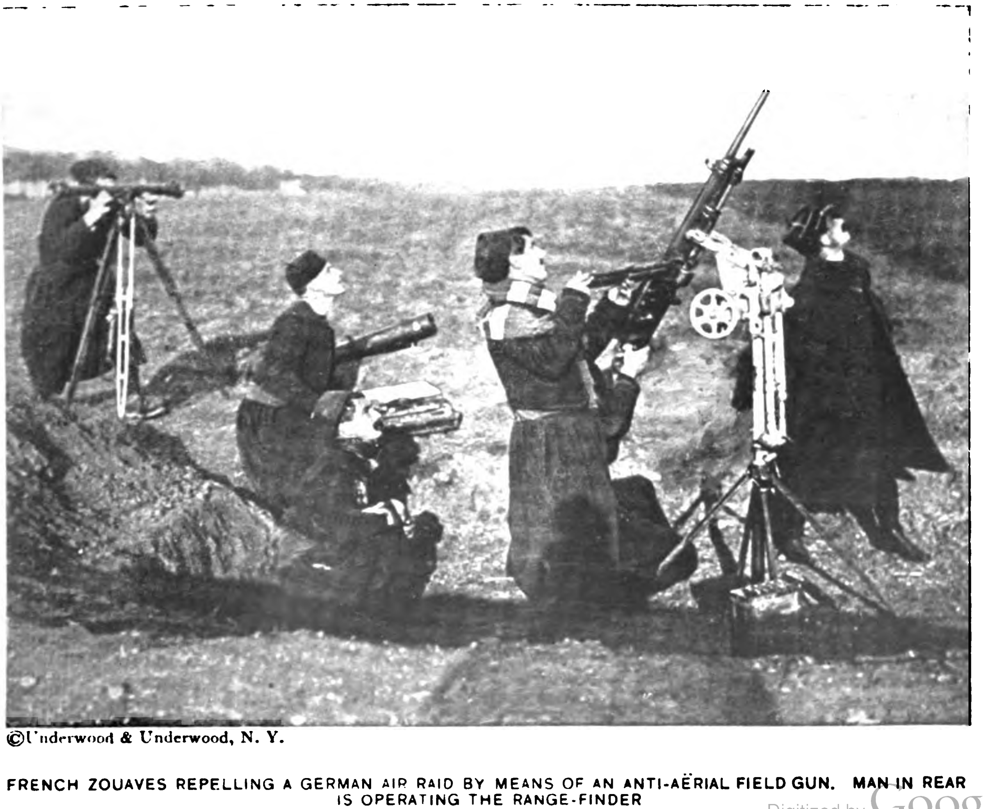
A GERMAN NAVAL ZEPPELIN. IN THE CORNER, ATTACHED TO A MILITARY AËROPLANE, IS THE SCOTT-DEWITZ BOMB-DROPPING APPARATUS



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FRENCH ZOUAVES REPELLING A GERMAN AIR RAID BY MEANS OF AN ANTI-AËRIAL FIELD GUN. MAN IN REAR IS OPERATING THE RANGE-FINDER

AËRONAUTICS IN THE EUROPEAN WAR

ing debated at the end of the year. The War Department had published and issued new (experimental) drill regulations for this arm; on the whole they were not received with favor, objection being made to the double instead of the single rank formation. Nothing was done during the year to remedy the deficiencies in infantry and field artillery.

Student's Camps. Should the United States be called upon to engage in war, one of the great deficiencies which the people would immediately be called upon to face would be that of trained officers. Of the small number of regular officers, many, if not most, would be called to higher commands, and the wear and tear of conflict would soon reduce the remainder. The same remark is true of such officers of the National Guard as would be competent to take up the responsibilities of command. Hence much interest attached to an experiment, in its second year in 1914, whereby the country would have available, on the outbreak of war, a number of young men not wholly ignorant of the duties of a subaltern in campaign. The experiment consisted in the establishment of two "Students' Military Instruction Camps," in which young men between the ages of 18 and 30 in universities, colleges, and the graduating classes at high-schools should receive some instruction, both theoretical and practical, in the elements of the military profession. The great success of these camps of 1913, led to the establishment of four in 1914. As stated in Bulletin No. 1, series of 1914, War Department, "The object of the camps is to give the young men of the country opportunity for a short course in military training, the better to fit them to discharge their military duty should their country ever stand in need of their services. The summer vacation period is selected to enable students to attend with the least inconvenience and greatest instructional advantage." Among the subjects taught in 1914 were (a) the theoretical principles of tactics, including advance and rear guards, patrols, outposts, and combat; (b) military map making and road sketching; (c) the proper handling and use of the rifle; (d) physical drill, marching, camping, tent pitching, etc. (by practice); (e) use and duties of the different arms and branches of the service (infantry, field artillery, cavalry, engineers, signal troops, and the medical corps). It will be recognized at once that this programme was a tolerably comprehensive one; the idea has proved most popular, and the "plan meets with the approval of all university and college authorities heard from on the subject, among whom are the heads of the majority of the larger educational institutions in the country." In fact, the matter has passed the experimental stage; the camps will be continued in 1915.

Aviation. The aviation service of the United States army received legislative sanction by an act approved July 18, 1914. This act created an aviation section, "which shall be a part of the Signal Corps of the Army," and is "charged with the duty of operating or supervising the operation of all military air-craft." Sixty officers, and two hundred and sixty men, of all grades, constitute the section, apart from such officers and men as may be authorized from the signal corps proper. Aviation officers are to be of two classes, junior military aviators, and military aviators; to these must be added so-called aviation students, who must be unmarried lieutenants of the line of the army, not over 30 years of age. These three classes make up the 60 officers. Aviation officers are to be selected from lieutenants of the line of the army: students are attached to the section for a sufficient time, not to exceed one year; aviation officers shall serve as such for periods of four years, unless sooner relieved. Students receive an increase of 25 per cent of their pay; junior aviators are to have the rank, pay, and allowances of one grade higher than that of their line commissions, if not higher than first lieutenant, and while on duty requiring frequent and regular participation in aërial flights, an increase of 50 per cent of their line pay. The same rules apply to aviators, except that their increase of pay shall be 75 per cent. The military aviation meet at San Diego, in October, resulted in failure.

Ordnance and Artillery. During the year a number of 14-inch guns of increased power were completed and successfully tested. Some of these were to be mounted in turrets in the defenses of Manila Bay and of the Panama Canal. These guns would impart to a 1660-pound projectile a muzzle velocity of 2250 foot seconds, with a maximum range of about 18,000 yards, and a theoretical penetration of 11.2 inches on normal impact of the best armor, at 15,000 yards. Twenty-three of the latest type of mortar were completed during the year, and issued for the Panama Canal defenses. A new type of 3-inch field gun, and of 3.8-inch field howitzer was developed. A drop block was instituted for the swinging breech block heretofore used. Liberal appropriations had reduced the time for completing the project of field artillery guns and carriages, from 1925, to 1920, and for providing reserve ammunition, from 1929, to 1919. A new machine gun, water cooled, the Vickers, was tested for the army, and was likely to be adopted. It was objected to this gun that its fire was too rapid. Its retainer holds 250 cartridges, and it will therefore fire 250 rounds with one loading. In the hands of untrained troops this might lead to waste of ammunition. The press, towards the end of the year, reported a remarkable invention by John Hays Hammond, Jr. According to these reports, this invention consisted in the control from a wireless station of a torpedo. According to General Weaver, Chief of Coast Artillery, "Mr. Hammond . . . has worked out the details of radio control so as to apply it in the form of a spar torpedo to a motorboat. His further experiments point to a satisfactory solution of the problem of applying his equipment to a submerged torpedo under radio control from shore. The distance to which this control can be exercised is limited only to the distinctness of vision aided by telescopes." If it should prove successful, this new weapon would prove of extraordinary value to American coast defenses. Although not adopted by the United States, yet as being of American origin, it is proper here to draw attention to the great success of the Lewis gun in the hands of the Allies.

MILITARY TERRITORY OF THE NIGER. A territory of the French West Africa government-general. Zinder is the capital. The country is well adapted to agriculture and grazing; the Touaregs devote themselves to the raising of camels, and the Peuhls to the raising of cattle and sheep. The imports in 1912 were valued at 890,000 francs—cottons, 575,000; kola nuts, 78,000; sugar, 32,000, etc. Exports, 852,-

000 francs—live animals, 320,000; salt, 162,000, etc. There are no railways. Transport is by packed animals. A commandant (Colonel Venel, in 1914) administers the territory under the control of the Lieutenant-Governor for Upper Senegal and the Niger. See FRENCH WEST AFRICA.

MILITIA. The year 1914 was one of great activity in the Organized Militia, and more progress was made toward the creation of an efficient field force than in any other past year. The commissioned strength suffered considerable diminution, but this was partly due to the elimination of surplus staff officers, and to that extent represents a forward step in the progress of the Organized Militia. The enlisted strength owes its large increase partly to the existence at one period during the year of the anticipation of immediate active service. The National Militia Board held its annual meeting early in the year. Its meeting was held at the same time as that of the Association of Adjutants General of the Organized Militia, and constant communication was maintained between the two bodies to the benefit of both. Many important recommendations were made as a result of this meeting. These included a recommendation of change in the method of allotment of funds appropriated under the militia law; the enactment of rules to prevent abuse of Federal funds at target practice; legislation to make more effective the National Militia Board; legislation providing for leave of absence without loss of pay or time for Federal employees who are members of the Organized Militia.

STRENGTH OF THE ORGANIZED MILITIA IN 1913 AND 1914, AS REPORTED BY INSPECTING OFFICERS, AND DETAILED STATEMENT OF GAINS AND LOSSES

State, Territory, or District	*1913* *Officers*	*1913* *Enlisted men*	*1914* *Officers*	*1914* *Enlisted men*
Alabama	178	2,891	168	2,609
Arizona	45	477	45	645
Arkansas	111	1,248	109	1,402
California	252	3,360	252	3,604
Colorado	187	1,309	122	1,938
Connecticut	184	2,457	177	2,511
Delaware	41	441	41	465
District of Columbia	189	1,507	124	1,721
Florida	98	1,127	73	1,075
Georgia	228	2,675	225	2,490
Hawaii	89	426	56	858
Idaho	50	790	58	839
Illinois	506	5,408	508	5,447
Indiana	179	2,297	169	2,109
Iowa	213	2,768	217	3,014
Kansas	180	1,694	182	1,720
Kentucky	170	1,843	164	2,210
Louisiana	60	1,082	65	1,009
Maine	109	1,389	108	1,404
Maryland	178	1,799	157	1,986
Massachusetts	452	5,841	424	5,869
Michigan	199	2,551	189	2,478
Minnesota	218	2,724	220	3,248
Mississippi	116	1,327	94	990
Missouri	256	3,820	244	3,840
Montana	58	557	40	686
Nebraska	184	1,038	182	1,384
Nevada *	...	.....	...	.....
New Hampshire	94	1,164	90	1,280
New Jersey	330	4,052	304	4,014
New Mexico	49	599	57	910
New York	1,056	14,901	974	15,591
North Carolina	251	2,317	209	2,367
North Dakota	52	577	60	679
Ohio	529	5,611	490	5,637
Oklahoma	56	896	77	1,330
Oregon	109	1,858	100	1,401
Pennsylvania	768	9,766	745	10,190
Rhode Island	106	1,252	96	1,303
South Carolina	154	1,755	156	1,794
South Dakota	71	608	68	878
Tennessee	127	1,707	117	1,798
Texas	174	2,887	192	2,731
Utah	31	323	29	419
Vermont	72	778	75	817
Virginia	207	2,492	206	2,606
Washington	91	1,147	88	1,312
West Virginia	100	1,283	104	1,517
Wisconsin	195	2,768	193	2,981
Wyoming	48	640	54	760
Total	9,180	111,672	8,792	119,251

* No Organized Militia (mustered out May 20, 1906).

During the year a bill was prepared and agreed upon by representatives of the War Department and the Organized Militia, to provide for the pay of militia. The bill met with the approval of the Secretary of War, and was sent to the militia committee in Congress. No final action had been taken on the bill at the end of the year.

The use of typhoid prophylactic was undertaken on a somewhat extended scale during the year. Sufficient serum was issued to inoculate nearly 30,000 members of the militia. During the year considerable progress was made in preparing the necessary forms and instructions for the induction of the Organized Militia into the service of the United States. It is believed that by the use of these forms the Organized Militia can be called out to Federal service within a reasonable time. The Chief of the Division of Militia Affairs points out in his annual report the importance of the creation of a reserve system. He declares that in the event of war in the lack of such a system, a delay in the training, arming, and equipping of troops would occur just at the time when the organizations were needed. In addition to this, there would be repeated the same unnecessary loss of life from preventable diseases which occurred in the Spanish-American War. He also emphasizes the importance of encampments and maneuvers to be held in connection with the regular troops. The table in the adjoining column shows the strength of the Organized Militia in 1913–14.

During the year, $6,499,552 was disbursed from Federal appropriations for the support of the Organized Militia.

MILK. See CHEMISTRY, INDUSTRIAL; DAIRYING.

MILLER, DARIUS. An American railway official, died Aug. 23, 1914. He was born in Princeton, Ill., in 1859, and was educated in the common schools. In 1877 he began railway service as stenographer in the general freight office of the Missouri Central Railway. He rose rapidly, until in 1883 he was appointed general freight and ticket agent of the Memphis and Little Rock Railway, serving in this position until 1887, when he became general freight and passenger agent and traffic manager of the St. Louis, Arkansas, and Texas Railway. From 1890 to 1893 he was traffic manager of the Queen and Crescent route, and from 1893 to 1898 was traffic manager and vice-president of the Missouri, Kansas, and Texas Railway. In the latter year he was appointed second vice-president of the Great Northern, and in 1902 he became first vice-president of the Chicago, Burlington, and Quincy Railway, and president in 1910.

MINERALOGY. Apart from the usual routine investigations concerning the chemical, physical, and crystallographic properties of minerals, which are of interest chiefly to the specialist, the year's work included some researches of general importance, and the description of several new species. Allen, Crenshaw, and Merwin continued their researches into the conditions surrounding the formation of iron and zinc sulphides, a subject they had discussed in an earlier paper that was reviewed in the YEAR BOOK for 1912. Their work has been carried on at the Carnegie Geophysical Laboratory, where the facilities for dealing with the problems of mineral genesis are absolutely unrivaled. The results of the recent study confirm the earlier data as to the mutual relations of these minerals. Pyrite and sphalerite represent the stable forms, deposited from heated alkaline solutions; the unstable compounds, marcasite and wurtzite, are the products of acid solutions at ordinary surface temperatures. The higher the temperature of the solution, other things being equal, the more the proportion of the stable to the unstable minerals, while increasing acidity of the solution, without change of other conditions, reverses the relations. It would appear, thus, that pyrite and sphalerite are formed by hot alkaline solutions, and their deposits indicate normally a considerable depth of origin, whereas marcasite and wurtzite accumulate under atmospheric conditions within the superficial zone.

The important ore of copper, bornite, according to Kraus and Goldberg, is not a definite chemical compound, although most authorities assign to it a specific formula. The discrepancies that exist between many analyses of the mineral, and the common formula, usually have been considered as anomalous or due to admixture, but a reëxamination of some of the typical material, as well as of new specimens, shows that the variations can not be so explained. The copper sulphide molecule (Cu_2S) exists in widely different proportions, relative to the iron sulphide (Fe_2S_3), from which a regular progression may be observed between the proportions demanded by the formula ($Cu_6Fe_2S_6$ to $Cu_{16}Fe_2S_{11}$). In the latter end of the series bornite approaches the composition of chalcocite, and in the former it approaches chalcopyrite; the three minerals, in fact, form a chemical and crystallographic group, although they crystallize in three different systems.

The formation of dolomite, and the conditions of stability of the minerals, calcite, dolomite, and magnesite during the process of their deposition, were discussed by R. C. Wallace, who applied the principles of physical-chemistry to the problems, a method of attack that has proved very informative in regard to many obscure questions of rock and mineral genesis. Dolomite originates in several ways: by the release of magnesium salts from decomposing algæ, and permeation of calcareous deposits as they are in process of accumulation on the bed of the ocean; through evaporation of the waters of inland seas, when calcite will first be thrown out of solution, but after the magnesium ions attain a certain degree of concentration, dolomite is precipitated; by the percolation of magnesium-bearing waters through limestone beds, with, at first, solution of calcite, and later, precipitation of dolomite; and in many instances, perhaps, by the leaching of limestone beds by acid meteoric waters. In the three methods first noticed, calcite is primarily the stable, solid phase, and dolomite only forms after concentration of the magnesium ions to a point where the calcite becomes unstable and passes into solution. The three minerals form an isomorphous series of a somewhat restricted relationship; calcite is miscible to a limited extent with dolomite, and the latter with magnesite. According to Foote and Bradley, who examined, chemically, specimens of calcite that had been formed in presence of dolomite, calcite may hold about 1 per cent of dolomite in solid solution. On the other hand, dolomite seems to possess the capacity of holding a considerable excess of calcite over the amount demanded by theory.

DIAMONDS. The discovery of a second locality for diamonds in North America, where these stones occur in their original surroundings, is of interest, although apparently the deposit has little commercial importance. The locality is in the Tulameen district, British Columbia, and was brought to light by a member of the Canadian Geological Survey. The diamonds are extremely small and are distributed through peridotite rock that is intrusive in strata containing little or no carbonaceous matter; it is thought that the carbon represents an original constituent of the igneous magma. In view of the rather wide distribution of diamonds in surface deposits, other deposits of the same type will doubtless be found.

NEW MINERALS. The following minerals, during 1914, were described as new species. *Temiskamite* is a nickel arsenide, having four atoms of nickel to three of arsenic, metallic, silver white, not found in crystals. It comes from Elk Lake, Ontario. *Cobalt-nickel pyrite* is a compound of the two metals with iron and sulphur, isomorphous with pyrite, and steel gray in color. The locality is Müsen, Germany. *Epidesmine*, a hydrous lime-alumina silicate of the zeolite class, is from Schwarzenberg, Saxony. *Hodgkinsonite* is an addition to the long list of new species that have been unearthed at Franklin Furnace, N. J. It is a zinc-magnesium silicate of monoclinic habit. *Yukonite* contains iron and calcium united to arsenious acid. It comes from Tagish Lake, Yukon Territory. *Empressite* belongs to the silver tellurides, containing silver and tellurium in the atomic proportions of one to one. It is described from examples found in the Empress Josephine mine, Kerber Creek district, Col. *Scarlesite* is a sodium borosilicate, from Searles Lake, Cal. Its formula resembles that of analcite; but the alumina of the latter is replaced by boron. *Wilkeite*, a complex calcium salt of phosphoric, silicic, carbonic, and sulphuric acids, bears resemblance to members of the apatite mineral group. It is found at Crestmore, Riverside Co., Cal. *Maucherite* is a nickel arsenide, three atoms of nickel to two of arsenic, from Eisleben, Thuringia. A monoclinic modification of calcite, occurring in hair-like crystals without cleavage, is named *lublinite*.

MINERAL PRODUCTION OF THE UNITED STATES. Copper and gold showed decreased production in 1913 as compared with 1912. The decrease in the production of copper was due in part to labor troubles in the Lake Superior district, and to generally unfavorable trade conditions which depressed prices and restricted mining operations, while the decreased production of gold seems to be due to the failing supply in some of the old and large producing districts, to replace which, new territory has not yet been developed. The maximum production of copper was made in 1912 when the value of the metal was $205,139,338, but declines in prices and smaller production in 1913 brought the value of the copper product down to $189,795,035. The gold production also attained its maximum in 1912, amounting in that year to $93,-

451,500, but the value of gold produced in 1913 was about $4,000,000 less.

With pig iron the basis of iron values, and the refined metals (smelter production) the basis of values for gold, silver, copper, lead, zinc, etc., the total value of the mineral production of the United States in 1913 was $2,445,805,017, compared with $2,243,972,481 in 1912. The four leading States in 1913 as in 1912 were Pennsylvania, Ohio, Illinois, and West Virginia. With iron ore as the basis of iron production, and with the recoverable metallic contents of ores as the basis of other metal output, the total value of the mineral production in 1913, was $2,103,739,388, compared with $1,918,474,249 in 1912. The same four States remain at the head but in different order of precedence, all holding their rank because of their leading positions in the production of coal. Pennsylvania remains at the head, with West Virginia second, Illinois third, and Ohio fourth. These four States produced about 45 per cent of the total value of the mineral output of the United States in 1913. California, with no standing as a producer of pig iron, iron ore, or coal, is fifth in rank, and owes its position to its importance as a producer of petroleum and gold. Michigan was sixth in rank in 1912, but because of the decrease in the production of and price of copper in 1913, dropped to eighth place, while Minnesota, as the most important producer of iron ore, advanced from ninth to sixth place, and Oklahoma, because of the increase in the production and the advance in the price of petroleum, advanced from twelfth place in 1912 to seventh in 1913. Michigan's production of iron ore increased in value in 1913, but this was not sufficient to overcome the large decrease in the value of copper. Arizona, which ranked eighth in 1912, fell to ninth place in 1913, and Montana, which held seventh place in 1912, dropped to tenth place in 1913, both of these being due to the decline in the copper production and value. Colorado, with gold, coal, and zinc as the principal products, ranked eleventh in both years, and Missouri, with lead and zinc as its chief products, fell from tenth to twelfth place because of the decline in the price of zinc. In the following table the States are arranged in the order of their rank as shown by the value of their mineral products in 1913, iron ore being taken as the basis of iron production, and the recoverable contents of the gold, copper, lead, zinc, etc., being taken as the basis of valuation of these metals:

RANK OF STATES IN VALUE OF MINERAL PRODUCTION IN 1912 AND 1913

State	*Principal mineral products in 1913 (in order of value)*	*1912*		*1913*	
		Rank	*Value*	*Rank*	*Value*
Pennsylvania	Coal, cement, clay products, natural gas	1	$445,799,653	1	$506,466,759
West Virginia	Coal, natural gas, petroleum, clay products	2	123,847,812	2	148,640,633
Illinois	Coal, petroleum, clay products, cement	3	123,068,867	3	131,825,221
Ohio	Coal, clay products, petroleum, natural gas	4	111,229,656	4	121,690,661
California	Petroleum, gold, cement, copper	5	93,219,149	5	100,791,369
Minnesota	Iron ore, clay products, stone	9	66,672,729	6	85,814,533
Oklahoma	Petroleum, coal, natural gas, zinc	12	53,614,130	7	80,168,820
Michigan	Iron ore, copper, cement, salt	6	80,062,486	8	72,143,211
Arizona	Copper, gold, silver, lead	8	67,497,838	9	71,429,705
Montana	Copper, silver, coal, zinc	7	71,620,873	10	69,307,056
Colorado	Gold, coal, zinc, silver	11	58,167,399	11	54,294,281
Missouri	Lead, zinc, coal, clay products	10	58,382,550	12	54,001,088
Utah	Copper, silver, lead, coal	13	51,004,942	13	53,606,520
Indiana	Coal, cement, clay products, stone	14	42,239,193	14	46,607,864
New York	Clay products, stone, cement, iron ore	16	38,481,910	15	41,594,052
Nevada	Copper, gold, silver, zinc	15	39,111,828	16	37,842,084
New Jersey	Clay products, zinc, cement, stone	17	37,195,940	17	37,271,129
Alabama	Coal, iron ore, clay products, stone	18	30,641,983	18	34,660,545
Texas	Petroleum, coal, clay products, cement	21	22,797,015	19	31,666,910
Kansas	Coal, cement, natural gas, petroleum	19	26,554,967	20	27,312,563
Kentucky	Coal, clay products, stone	23	22,477,530	21	26,845,579
Iowa	Coal, clay products, cement, gypsum	20	22,900,850	22	25,602,015
Idaho	Lead, silver, copper, gold	24	21,816,890	23	24,565,826
Tennessee	Coal, copper, stone, phosphate rock	25	19,362,209	24	21,052,931
Louisiana	Petroleum, sulphur, natural gas	26	15,357,841	25	21,011,828
Alaska	Gold, copper, silver, stone	22	22,732,947	26	19,686,213
New Mexico	Copper, coal, silver, zinc	29	14,391,355	27	17,862,369
Washington	Coal, cement, clay products, stone	27	15,347,818	28	17,579,743
Virginia	Coal, clay products, stone, iron ore	28	14,995,842	29	17,178,580
Wyoming	Coal, petroleum, iron ore, stone	31	13,374,088	30	13,682,091
Wisconsin	Zinc, stone, iron ore, clay products	30	14,192,287	31	12,452,480
Maryland	Coal, clay products, stone, cement	32	10,851,671	32	11,292,723
Florida	Phosphate rock, clay products, fuller's earth, stone	33	10,272,594	33	10,508,016
Vermont	Stone, slate, talc and soapstone	34	9,087,560	34	9,647,985
South Dakota	Gold, stone, silver	35	8,486,240	35	7,888,411
Massachusetts	Stone, clay products, lime, mineral waters	36	6,654,514	36	7,044,529
Arkansas	Coal, bauxite, clay products, stone	38	6,258,726	37	6,780,760
Georgia	Clay products, stone, cement, coal	37	6,306,140	38	6,525,792
Maine	Stone, lime, clay products, mineral waters	39	3,925,526	39	4,429,584
Connecticut	Stone, clay products, lime, mineral waters	40	3,715,480	40	3,795,297
North Carolina	Clay products, stone, mica	41	3,368,928	41	3,739,696
Oregon	Gold, clay products, sand and gravel, stone	42	2,558,549	42	3,563,919
New Hampshire	Stone, clay products	43	1,949,876	43	2,218,925
South Carolina	Clay products, phosphate rock, stone	44	1,606,989	44	1,464,150
Nebraska	Clay products, stone, sand and gravel	45	1,490,582	45	1,433,718
Mississippi	Clay products, sand and gravel	46	1,242,528	46	1,143,472
North Dakota	Coal, clay products	47	1,025,741	47	1,055,676
Rhode Island	Stone, clay products	48	942,842	48	813,952
Delaware	Stone, clay products, sand and gravel	49	425,360	49	541,542
Dist. of Col.	Clay products, sand-lime brick	50	300,336	50	246,582
Total		..	[a] 1,918,474,249	..	[a] 2,103,739,388

[a] It must be remembered that in this table iron ore, not pig iron, is taken as the basis of iron valuation, and that in the case of other metals mine production (recoverable content of metals) is considered. With pig iron and the smelter figures for other metal production taken as the basis, in conformity with the usual custom, the total value of the mineral production of the United States in 1913 was $2,445,805,017, against $2,243,972,481 in 1912, the increase in the later year being $201,832,536, or 8.99 per cent.

The States west of the Mississippi River, and especially those of the Rocky Mountain and Pacific coast divisions, are popularly considered as the mining States. It is interesting to note that of the ten leading States in 1913, five—Pennsylvania, West Virginia, Illinois, Ohio, and Michigan—are east of the Mississippi River; four—California, Oklahoma, Arizona, and Montana—are west of it; and one—Minnesota—is divided by the river. The combined production of all the States east of the Mississippi River, which aggregate less than 30 per cent of the total area of the country, exclusive of Alaska, is nearly two-thirds of the total; whereas the States west of the river, which aggregate about 70 per cent of the total area of the country, contribute more than one-third of the total value of the output.

The metal group in 1913 showed a particularly interesting comparison to 1912. Of the six important metals, three showed increases, and three decreases. The production of pig iron exclusively from domestic ore increased from 28,981,195 long tons, valued at $402,378,453, to 29,145,034 tons, valued at $439,633,768; copper production decreased from 1,243,268,720 pounds to 1,224,484,098 pounds, with a decrease in value from $205,139,338 to $189,795,035; the value of the gold decreased from $93,451,500 to $88,884,400; the production of silver increased from $39,197,500 to $40,348,100; the lead production (smelter output) increased from 415,395 tons, valued at $38,385,550, to 436,430 tons, valued at $38,405,840; and the output of zinc increased in quantity from 323,907 to 337,252 short tons, and declined in value from $44,699,166 to $37,772,224. The combined value of these metals increased from $822,251,507 to $834,839,355, a gain of $12,587,848, or 1.53 per cent. The three fuels—coal, petroleum, and natural gas—increased from $944,383,275 in 1912 to $1,085,456,850 in 1913, a total gain of $141,073,575, or 15 per cent. By far the largest gain, both in amount and percentage of value, was in the output of petroleum. For a more detailed discussion of the quantity and value of metals, see the representative articles in their alphabetical order.

PRODUCTION OF GOLD IN THE UNITED STATES DURING 1914

State or Territory	*Fine ounces*	*Value*
Alabama	590	$ 12,200
Alaska	766,744	15,850,000
Arizona	218,113	4,508,800
California	1,037,537	21,447,800
Colorado	961,748	19,881,100
Georgia	552	11,400
Idaho	51,568	1,066,000
Montana	190,361	3,935,100
Nevada	532,309	11,003,800
New Mexico	58,418	1,207,600
North Carolina	5,752	118,900
Oregon	77,134	1,594,500
South Carolina	295	6,100
South Dakota	353,621	7,310,000
Tennessee	285	5,900
Texas	498	10,300
Utah	153,842	3,180,000
Virginia	48	1,000
Washington	29,383	607,400
Wyoming	106	2,200
Philippine Islands	51,282	1,060,100
Porto Rico	150	3,100
Total	4,490,336	$92,823,500

These figures compare with a production in 1913 of $88,884,400, showing a gain in the gold product of $3,939,100.

MINERAL PRODUCTS OF THE UNITED STATES

Calendar Years 1912 and 1913

Product	*1912*		*1913*	
METALS	*Quantity*	*Value*	*Quantity*	*Value*
Pig iron (*a*) (spot value *b*)..long tons (2,240 lbs.)	30,180,969	$420,563,388	30,888,935	$458,342,345
Ferro-alloys (*c*) ....do..	328,685	12,223,776	296,207	13,015,362
Silver, commercial value (*d*)..........troy ounces	63,766,800	39,197,500	66,801,500	40,348,100
Gold, coining value (*e*) ....do..	4,520,717	93,451,500	4,299,784	88,884,400
Copper (*f*), value at New York City ......pounds	1,243,268,720	205,139,338	1,224,484,098	189,795,035
Lead (*f*), value at New York City .... short tons (2,000 lbs.)	415,395	37,385,550	436,430	38,405,840
Zinc (*f*), value at St. Louis ....do..	323,907	44,699,166	337,252	37,772,224
Quicksilver, value at San Francisco.....flasks (*g*)	25,064	1,053,941	20,213	813,171
Aluminum (consumption since 1904) ......pounds	65,607,000	11,907,000	72,379,000	13,845,000
Antimony (*h*) ....short tons	....	....	....	....
Antimonial lead ....do..	13,552	1,311,348	16,665	1,675,179
Nickel (*i*), value at New York City ......pounds	....	(*j*)	....	(*j*)
Tin ....do..	(*k*)	124,800	(*k*)	36,970
Platinum, value at New York City......troy ounces	1,005	45,778	1,034	46,530
Total value of metals	....	867,103,085	....	882,980,156
NON-METALS (Spot Value)				
Fuels:				
Bituminous coal (*l*) ....short tons	450,104,982	517,983,445	478,523,203	565,307,658
Pennsylvania anthracite ....long tons	75,322,855	177,622,626	81,718,680	195,181,127
Natural gas	....	84,563,957	....	87,846,677
Petroleum .... barrels (42 gallons)	222,935,044	164,213,247	248,446,230	237,121,388
Peat	....	228,572	....	197,200
Structural Materials:				
Clay products (*m*)	....	172,811,275	....	181,289,182
Cement ....barrels (380 lbs. net)	83,351,191	67,461,513	92,949,102	93,001,169
Glass sand ....short tons	1,465,386	1,480,471	1,791,800	1,895,991
Gypsum ....do..	2,500,757	6,563,908	2,599,508	6,774,822
Lime ....do..	3,529,462	13,970,114	3,595,390	14,648,362
Sand, molding, building, etc., and gravel..do..	66,889,175	21,682,787	77,764,049	22,321,517
Sand-lime brick	....	1,200,228	....	1,288,825
Slate	....	6,043,318	....	6,175,476
Stone (*n*)	....	78,198,220	....	83,782,995
Abrasive Materials:				
Emery (also corundum in 1904, 1905, 1906) short tons	992	6,652	957	4,785
Abrasive quartz and feldspar ....do..	(*o*)	....	(*o*)	....
Garnet for abrasive purposes ....do..	4,182	163,287	5,808	183,422
Grindstones	....	916,889	....	855,627
Diatomaceous (infusorial) earth and tripoli short tons	....	125,446	....	285,821

Product	*1912*		*1913*	
NON-METALS (Spot Value)	*Quantity*	*Value*	*Quantity*	*Value*
Millstones	....	71,414	....	56,163
Oilstones, etc.	....	282,218	....	207,852
Pumice ....short tons	27,146	86,687	24,563	55,408
Chemical Materials:				
Arsenious oxide ....pounds	6,282,000	190,757	5,026,000	159,236
Borax ....short tons	42,815	1,127,818	58,051	1,491,530
Bromine ....pounds	647,200	145,805	572,400	115,436
Calcium chloride ....short tons	18,550	117,272	19,611	130,030
Fluorspar ....do..	116,545	769,163	115,580	736,286
Lithium minerals ....do..	....	....	(*j*)	....
Marls ....do..	....	....	(*j*)	....
Phosphate rock ....long tons	2,973,332	11,675,774	3,111,221	11,796,231
Pyrite ....do..	350,928	1,334,259	341,338	1,286,084
Sulphur ....do..	303,472	5,256,422	311,590	5,479,849
Sulphuric acid (60° Baumé) from copper and zinc smelters ....short tons	614,073	4,240,941	632,287	4,346,272
Salt ....barrels (280 lbs., net)	33,324,808	9,402,772	34,399,298	10,123,139
Pigments:				
Barytes (crude) ....short tons	37,478	153,313	45,298	156,275
Cobalt oxide ....pounds	....	....	....	....
Mineral paints (*p*) ....short tons	181,154	10,069,588	173,168	9,543,306
Zinc oxide ....do..				
Miscellaneous:				
Asbestos ....short tons	4,403	87,959	1,100	11,000
Asphalt ....do..	449,510	4,620,781	529,190	5,282,370
Bauxite ....long tons	159,865	768,932	210,241	997,698
Chromic iron ore ....do..	201	2,758	255	2,854
Feldspar ....short tons	86,572	520,562	120,955	776,551
Fuller's earth ....do..	32,715	305,522	38,594	369,750
Gems and precious stones	....	319,722	....	319,454
Graphite ....crystalline, pounds....	3,543,771	187,689	5,064,727	254,328
amorphous, short tons	2,063	32,894	2,248	39,428
Magnesite ....short tons	10,512	84,096	9,632	77,056
Manganese ore ....long tons	1,664	15,728	4,048	40,480
Manganiferous ore ....do..	51,517	19,942	59,403	25,124
Mica ....sheet, pounds....	845,483	282,823	1,700,677	353,517
scrap, short tons	3,226	49,073	5,322	82,543
Mineral waters ....gallons sold	62,281,201	6,615,671	57,867,399	5,631,391
Silica (quartz) ....short tons	97,874	191,685	204,759	668,011
Talc and soapstone ....do..	92,403	1,050,693	94,128	1,119,597
Talc, fibrous ....do..	66,867	656,270	81,705	788,500
Thorium minerals (monazite), and zircon ....pounds	....	....	....	....
Titanium ore (rutile) ....do..	550,000	....	610,000	49,000
Tungsten ore ....short tons	1,330	502,158	1,537	672,118
Uranium and vanadium minerals ....do..	....	(*j*)	....	(*r*) 1,020,000
Total value of non-metals	....	1,376,369,896	....	1,562,324,861
Total value of metals	....	867,103,085	....	882,980,156
Estimated value of mineral products unspecified (*s*)	....	500,000	....	500,000
Grand total	....	2,243,972,481	....	2,445,805,017

a Marketed production of iron ore. 1912: 57,017,614 long tons; value at mines, $107,050,153. 1913: 59,643,098 long tons; value at mines, $130,905,558.

b By "spot" value is meant value at the point of production.

c Ferro-alloys include ferromanganese and spiegeleisen, ferrosilicon and ferrophosphorus, ferromolybdenum, ferrotitanium, ferrotungsten, and ferrovanadium. The ferro-alloys are made chiefly of foreign ores. Pig iron in 1910 included ferro-alloys valued at $7,428,502.

d Average price per troy ounce in 1912, 61.5 cents; in 1913, 60.4 cents.

e Since 1905, coining value, $20.671834625323.

f The product from domestic ores only.

g Of 76½ avoirdupois pounds net; of 75 avoirdupois pounds net since June, 1904.

h Includes antimony smelted from imported ores, and also antimony contained in hard lead.

i Includes nickel in copper-nickel alloy, and in exported ore and matte.

j Included under unspecified products.

k In 1912, from Alaska. In 1913, from Alaska, South Carolina, and South Dakota.

l Including brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania. Coke, 1912: 43,983,599 short tons; value at ovens, $111,805,113. 1913: 46,299,530 short tons; value at ovens, $128,922,278.

m Value of clay mined and sold as unmanufactured clay. 1912: $3,946,020. 1913: $4,180,459.

n Includes limestone for iron flux, but not grindstones.

o Included under feldspar and silica (quartz).

p Includes metallic paint, mortar colors, ocher, umber, sienna, shale, ground slate; in 1912, also zinc oxide; in 1913, also zinc oxide, but no whiting nor zinc-lead.

r Estimated value of recoverable radium in ore when extracted.

s Unspecified products include nitrate of soda, carbonate of soda, sulphate of soda, and alum clays used by paper manufacturers, and also the various products noted under the respective years. The value was estimated at $500,000 in 1913.

MINERAL SPRINGS. See HYDROTHERAPY; and SARATOGA SPRINGS.

MINER'S ANÆMIA. See HOOKWORM DISEASE.

MINES, BUREAU OF. See UNITED STATES, *Bureau of Mines.*

MINES, SUBMARINE. See NAVAL PROGRESS.

MINIMUM WAGE. The first American State to enact a minimum wage law was Massachusetts in 1912. It was followed in 1913 by California, Colorado, Minnesota, Nebraska, Oregon, Utah, Washington, and Wisconsin. In 1914 the only legislation dealt with modifications in the Massachusetts' law; but various developments occurred. There were commissions of investigation at work in Indiana, Michigan, Missouri, New York, and Ohio.

The legislation in America was immediately due to the enactment in 1910 of a Trades Boards Act in England, which in turn had been due to the experience in Victoria with the minimum wage doctrine since 1897. The increased cost of living has doubtless also been an important factor in stimulating such legislation. A fundamental principle put forward by its advocates is that every industry must be self-supporting, that is, must be able itself to pay its workers a living wage. Any industries so unfavorably situated economically as to make this impossible are considered socially undesirable. The minimum-wage laws therefore strike directly at the undue exploitation of women and children in industry. Numerous investigations of recent years, carried on in the different States and by the Federal Bureau of Labor, have shown that considerable numbers of even adult workers were employed at wages insufficient to maintain a minimum normal standard of living. (See WOMEN IN INDUSTRY.) This was found to be true not only in the sweated home industries, but also in various factory employments and department stores. It was believed to have a close connection with the problem of PROSTITUTION (q.v.). Investigations showed that there were most extraordinary variations in the wages paid in the same industries in the same State, indicating a lack of standardization, and undue power in the hands of the employer.

It is expected that the minimum wage laws will result in a standardization of wages by forcing all employers to pay a reasonable minimum. It is generally agreed by numerous investigators, that eight or nine dollars per week is the minimum for an adult woman who is self-depending. The leveling up of wages will tend to decrease home work and thus reduce "sweating." Various petty abuses by unscrupulous employers will be checked. Minimum-wage laws will probably stimulate organization among unskilled workers. It is believed this will be accompanied by a sense of responsibility, which will diminish the hold of revolutionary labor movements.

On the other hand, some workers whose incapacity is below that required to earn the established minimum will be displaced. Business will be injured in some localities, especially by interstate competition between States with and without minimum-wage laws. Prices of certain products should increase with a consequent effect upon the cost of living.

STATE LAWS vary in the scope of their application, from a few designated industries, to all industries; some apply to women and minors under 18, others to women and minors under 21, the Utah law to females, and the Wisconsin law to women and minors. They are all administered by special commissions except those of Utah and Wisconsin, which are respectively in charge of the Commissioner of Labor and Statistics, and the Industrial Commission. These commissions, as a rule, are allowed expenses only, though California and Massachusetts pay $10 per day for actual time. All commissions are given power to determine a living wage; and those of California, Oregon, and Wisconsin may determine maximum hours and other conditions of labor. They are uniformly given power to subpœna witnesses, administer oaths, and examine books. In California and Wisconsin they are authorized to enter premises. In Massachusetts, Minnesota, Nebraska, Oregon, Utah, and Wisconsin the commissions are given power to enforce those parts of the law relating to wages. The Utah law goes to the extent of fixing the following minima: for girls under 18 years, 75 cents per day; for women over 18 years, 90 cents per day as learners; for experienced adult women, $1.25 per day. Penalties for employers range from publicity in Nebraska, and misdemeanor in Utah, to fine or imprisonment in California, Colorado, Minnesota, and Oregon.

California. On Jan. 1, 1914, the California Industrial Welfare Commission of five members was organized, its main function being to administer the minimum wage law of 1913. It had extensive powers of inquiry, and authority to fix minimum wages directly or with the assistance of a special wage board for the industry affected. It adopted the policy of coöperating with the better employers and stimulating them to maintain acceptable standards, and at the same time assist the commission in bringing the more stubborn and inefficient employers into line with the newer ideals of industry. Conferences were held with employers at San Francisco, Sacramento, and Los Angeles. Fruit canneries, vegetable canneries, department stores, laundries, and confectionery establishments coöperated with the Commission in inquiries into hours and earnings in their respective industries.

Maine. On November 23, the minimum wage law, passed by the Maine Legislature in 1913, was declared unconstitutional and a temporary injunction was given against members of the Minimum Wage Commission, in a suit brought by manufacturers of Winona. The law was held to be unconstitutional principally because it delegated legislative power to an appointed commission, and placed decision as to whether there should be a minimum wage or not in their hands. It was also held that there was no necessity for the minimum wage for the protection of safety, health, or morals of women workers. In the opinion of Judge Catlin of the Ramsey District Court, who rendered the decision, the working of the law would probably increase immorality, if morals are dependent upon wages, and that the wage commission became paternalistic so far as women and children workers were concerned. He further said that the law interfered with both employer and employee, and is in violation of the Constitution of the United States.

Minnesota. The Minnesota law of 1913 created a minimum-wage commission with authority to establish advisory boards to assist in determining the living wages of women and minors. One advisory board was established in 1914 for the mercantile, and one for the manufacturing concerns of St. Paul and Minneapolis, and one for both these industries in Duluth. In each case the board was composed of employers and employees, together with representatives of the public. After five or six months' deliberation the mercantile board of the Twin Cities recommended in October, by a vote of 11 to 9, that $8.65 per week be considered the minimum cost of living for experienced female adult workers. Of this sum, $2 was allowed for clothing, $4.80 for board and lodging, and $1.85 for miscellaneous expenses. The manufacturing board of these cities, by a vote of 9 to 4, recommended $8.75 per week, while the Duluth board, by a vote of 16 to 2, recommended $8.50 per week. The State commission was authorized to accept or reject these recommendations, since the wage boards are merely advisory. Early in November the commission issued an order establishing $9 a week as the minimum wage in cities of the first class, $8.50 in cities of the second, third, and fourth classes, and $8 in all other places, for women and minors employed in mercantile establishments, telephone and telegraph operations, and office work. For those engaged in manufactories, laundries, and restaurants and hotels, rates of 25 cents less were fixed, except that the lowest rate permitted was $8. About the same time employers sought an injunction to restrain the commission from giving effect to these orders, on the ground that the law was unconstitutional.

Oregon. The Oregon law of 1913 gave the Industrial Welfare Commission power to fix hours, wages, and other conditions of work so as to preserve the health and welfare of working women. Among its various orders it established a minimum wage of $9.25 per week for store women, and $8.64 per week for factory women. A box manufacturer, F. C. Stettler, applied for an injunction against this order. In November, 1913, this application was denied and the constitutionality of the law upheld by a State Circuit Court. Appeal was made to the Oregon Supreme Court, the appeal being based on the contention that the law took property without due process of law and denied freedom of contract in violation of the Fourteenth Amendment to the Federal Constitution. Various briefs were submitted in defense of the law, including an extensive one by Mr. Louis D. Brandeis and Miss Josephine Goldmark. This latter brief was remarkable in that it said practically nothing about legal precedent but gave extensive evidence as to the evil effects of low wages on health, morals, and efficiency. This evidence was gathered from numerous public reports both in the United States and abroad. It was shown that inadequate pay results in two damages to health, namely, inadequate nourishment and lack of medical care. Abundant evidence was brought forward to show that poorly paid women workers reduce their diet to the lowest possible point, in order to provide from a scanty wage, lodging and clothing. It was also shown that while under-payment may not be a primary cause of immorality, nevertheless low wages are an important contributory factor. The fallacy of the "pin money" theory was exposed. The benefits of the legal minimum wage to both employer and employee was shown by evidence from England and Australia. In March the State Supreme Court rendered a decision unanimously upholding the validity of the minimum-wage law. This decision was of great significance, because it was the first case in which the legality of a minimum wage statute was determined by a State Supreme Court. Appeal was taken to the United States Supreme Court, before which the case was argued on December 17.

On March 9 the Oregon Industrial Welfare Commission issued an order establishing a minimum wage of $8.25 per week for experienced adult women in any industry in Oregon paid by time rates, and $6 per week for inexperienced adult workers. It also declared that the maximum time such workers may be considered inexperienced is one year. Slightly higher minimum rates were made applicable to the city of Portland, namely, $8.64 for factory women, and $9.25 for store women.

LEGISLATION. The only minimum wage legislation in 1914 was the amendment of the Massachusetts law. The wage boards authorized may now be composed of equal numbers of employers and employees, instead of not less than six as formerly. The Minimum Wage Commission must inform both employers and employees in the trade affected, of its intention to establish a wage board; and must request from both sides names of representatives from which the commission must select the wage board, provided such names are submitted within ten days. Publication of its findings and recommendations is required, not in one newspaper in each county as heretofore, but "at such times and in such manner as it may deem advisable." Employers must, in addition to records previously required, keep account of the weekly wages of each woman and minor. An employer not only must not discharge or discriminate against an employee who has testified or may testify in wage proceedings, but also must not discharge those who serve upon wage boards or give information regarding conditions of employment. Penalty ranges from $200 to $1000.

GREAT BRITAIN. In 1910 Great Britain established wage boards in the chain-making, lace-making, tailoring, and paper-box industries. In 1913 laws were passed, effective in 1914, establishing similar boards in each of the following industries: cocoa, chocolate, sugar, and confectionery; food preserving; shirt-making; hollow-ware, including the manufacture of tin boxes and canisters; the linen and cotton embroidery trade of Ireland; and the calendar and machine-ironing branch of the laundry industry. These added 150,000 to the previous 250,000 workers under the Trades Boards Act. The vast majority of these are women.

Official record showed that in the confectionery trade 40 per cent of the employees earned less than 10*s*., or $2.50 per week. In the preserved food, jam, sauce, and pickle trades this percentage was 44. Moreover, great inequalities existed in wages for the same work; these were found in nearly every branch of these trades. Thus, for example, the weekly rate paid tea-packers was 10*s*. by one firm and 18*s*. by another using the same machines. In shirt-making the general level of wages was better, yet one-fourth of the Irish workers received less than 5½*s*. per week, and the majority of home workers were underpaid. In general, 21 per cent of all the women in this industry earned less than 10*s*.; and of the hand-sewers, one-third earned less than 10*s*. Wages in the tin box industry ranged from 10*s*. to 14*s*. per week. The worst examples of sweating and exploitation were found among the Irish embroidery workers where wages were reduced to one halfpenny, or a penny an hour, where hours were excessive, and eye strain most injurious. Among laundry workers the per cent earning less than 10*s*. was 32.

Experience during the past four years in England has shown that the fixing of a minimum rate is not only not impossible, but that a leveling up of wages toward the standard of better firms is feasible. In the affected trades, wages have been raised sufficiently to effect a considerable change in the economic conditions of the workers. This has been accompanied, as a rule, by a rise of prices to consumers. Moreover, since the rates are almost universally piece-rates, there has not resulted any considerable loss of employment by inefficient workers. See FEMINISM, *passim*.

MINING. See section so entitled under various countries.

MINING INDUSTRY. See MINERAL PRODUCTION OF THE UNITED STATES.

MINNESOTA. POPULATION. The estimated population on July 1, 1914, was 2,213,919. The population in 1910 was 2,075,708.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only:

		Acreage	*Prod. bu.*	*Value*
Corn	1914	2,600,000	91,000,000	$47,820,000
	1913	2,400,000	96,000,000	50,880,000
Wheat	1914	4,050,000	42,975,000	43,884,000
	1913	4,200,000	68,040,000	51,711,000
Oats	1914	3,040,000	85,120,000	34,048,000
	1913	2,980,000	112,644,000	36,046,000
Rye	1914	279,000	5,245,000	4,668,000
	1913	300,000	5,700,000	2,736,000
Barley	1914	1,378,000	31,694,000	5,148,000
	1913	1,450,000	34,800,000	5,500,000
Potatoes	1914	270,000	30,780,000	9,850,000
	1913	275,000	30,250,000	15,780,000
Hay	1914	1,743,000	*a* 3,294,000	20,098,000
	1913	1,660,000	2,490,000	16,484,000

a Tons.

MINERAL PRODUCTIONS. Minnesota far outranks all other States in the mining of iron ore, and during the four years from 1909 to 1913 contributed both in quantity and value considerably more than half the iron ore produced and marketed in the United States. In 1913 the total marketed production of iron ore in the United States was 59,643,098 long tons, valued at $130,905,558. Of this Minnesota contributed 36,603,331 tons, valued at $80,789,025. This may be compared with the production of 34,249,813 long tons, valued at $61,805,017 in 1912. Because of its great wealth in iron ores and of their extended development, Minnesota ranks ninth among all the States in the total value of its mineral production. The value of the iron ore produced represents considerably more than 90 per cent of the total output. The only other important minerals are the products of stone quarries and clay pits. The total value of the mineral production of the State in 1913, exclusive of iron ore, was $5,025,508.

TRANSPORTATION. The total mileage of main line railways operated in the State on June 30, 1914, was 9002 miles, an increase of 54 miles from the mileage of 1913. The increases consist chiefly of new mining and logging spurs.

FINANCE. The report of the State Treasurer shows a balance on July 1, 1913, of $1,842,367. The receipts for the year amounted to $22,680,208, and the disbursements to $20,714,746, leaving a balance in the treasury on July 31, 1914, of $3,807,830.

EDUCATION. The total enrollment in the public schools of the State in 1914, was 457,041. The average daily attendance was 376,929. There were 16,920 teachers receiving an average salary of $59 per month.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions, under the supervision of the State Board of Control, with their populations on Nov. 30, 1914, are as follows: Anoka State Asylum, 740; Hastings State Asylum, 756; Fergus Falls State Hospital, 1573; Rochester State Hospital, 1025; St. Peter State Hospital, 1216; School for Feeble Minded, at Faribault, 1531; School for the Deaf, at Faribault, 252; School for the Blind, at Faribault, 75; Owatonna State Public School, 304; Red Wing Training School for Boys, 241; St. Cloud State Reformatory for young men, 562; Stillwater State Prison, 1119; State Sanatorium for consumptives, at Walker, 152; Hospital for Crippled Children, at St. Paul, 92; Hospital for Inebriates, at Willmar, 112; Home School for Girls, at Sauk Centre, 175. The total expenditures for these institutions for the year ending July 31, 1914, was $2,052,009.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914 as the sessions are biennial and the last was held in 1913. Elections were held for Governor and representatives in Congress. In the nominating primaries, held on June 16, Governor Eberhard was defeated for renomination by W. E. Lee. The Democrats nominated W. S. Hammond, and the Progressives, H. T. Halbert. In the election held on November 3, the Democrats elected their candidate for Governor with 156,304 votes, compared with 143,730 for Lee, the Republican candidate, and 3553 for Halbert, the Progressive candidate. The total vote cast in this election was 343,255, compared with 334,219 in the presidential election of 1912. The Democratic vote showed an increase of about 50,000; the Republican an increase of about 75,000; and the Progressive vote a falling off of over 120,000. Republican Representatives were elected in the first, second, third, fifth, sixth, seventh, eighth, ninth, and tenth districts. The Democrats elected their candidate in only one district. On August 12 the International Harvester Company was declared to be a monopoly in restraint of trade, and its dissolution was ordered by the United States District Court at St. Paul. See the article TRUSTS.

STATE GOVERNMENT. Governor, W. S. Hammond; Lieutenant-Governor, J. A. A. Burnquist; Secretary of State, Julius A. Schmahl; Auditor, J. A. O. Preus; Treasurer, Walter J. Smith; Attorney-General, L. A. Smith; Adjutant-General, Fred B. Woods; Superintendent of Education, C. G. Schulz; Commissioner of Insurance, J. A. Preus; Commissioner of Agriculture, ——; all Republicans except Governor.

JUDICIARY. Supreme Court: Chief Justice, Calvin L. Brown; Associate Justices, Andrew Holt, G. L. Brunn, P. E. Brown, Oscar Hallam—all non-partisan. Clerk, I. A. Caswell, Republican.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	42	90	132
Democrats	20	26	46
Republican majority	22	64	86

The representatives in Congress will be found under the section *Congress*, article UNITED STATES.

MINNESOTA, UNIVERSITY OF. A State institution for higher learning, founded at Minneapolis in 1869. The enrollment in all departments of the university in the autumn of 1914 was 3950. The faculty numbered 496. There were no notable changes in the faculty during the year, and no noteworthy benefactions were received. The endowment of the university in 1914 amounted to $1,605,356, and the income to $3,033,891. The library contains 185,000 volumes. The president is George E. Vincent, LL.D.

MINOT, CHARLES SEDGWICK. American anatomist and educator, died Nov. 19, 1914. He was born in West Roxbury, Boston, in 1852, and graduated from the Massachusetts Institute of Technology in 1872, taking post-graduate work at the Universities of Leipzig, Paris, and Würzburg, from 1873 to 1876. In 1880 he was appointed lecturer on embryology and instructor in oral pathology and surgery at the Harvard Medical School, becoming later instructor in histology and embryology (1883), assistant professor (1887), and professor in 1892. In 1895 he was appointed James Stillman professor of comparative anatomy, and in 1912 became director of the Anatomical Laboratories, being Harvard exchange professor at the Universities of Berlin and Jena in 1912–13. His published writings include: *Human Embryology* (1892); *Bibliography of Vertebrate Embryology* (1893); *A Laboratory Text-Book of Embryology* (1903); *Age, Growth and Death* (1908); *Modern Problems of Biology* (1913). He was a member of foreign and American scientific societies.

MINTO, GILBERT JOHN MURRAY KYNYNMOND ELLIOT, fourth Earl of. An English nobleman and administrator, died Feb. 28, 1914. He was born in 1847, and was educated at Eton and at Trinity College, Cambridge. In 1867 he was appointed to the Scots Guards, but retired in 1870, and in 1877 served with the Turkish army, later taking part in the Afghan War of 1879. Two years later he was private secretary to Lord Roberts at the Cape, and in the following year took part in the Egyptian campaign as a volunteer. In 1883 he became military secretary to the Marquis of Lansdowne, then Governor-General of Canada, and after holding this post for two years was appointed chief of staff in the Northwest Canada rebellion of 1885, later serving from 1898 to 1904 as Governor-General of Canada. From 1905 to 1910 he was Viceroy of India, and in the year 1909 three attempts were made to slay him with bombs. He received the degree of LL.D. from Toronto University, and he was Lord Rector of Edinburgh University.

MISSISSIPPI. POPULATION. The estimated population on July 1, 1914, was 1,901,882. The population in 1910 was 1,797,114.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only:

		Acreage	*Prod. bu.*	*Value*
Corn	1914	3,150,000	58,275,000	$42,541,000
	1913	3,150,000	63,000,000	48,510,000
Oats	1914	160,000	3,680,000	2,392,000
	1913	140,000	2,800,000	1,764,000
Rice	1914	1,000	30,000	26,000
	1913	1,500	42,000	29,000
Potatoes	1914	12,000	960,000	912,000
	1913	12,000	960,000	960,000
Hay	1914	210,000	*a* 304,000	3,648,000
	1913	220,000	293,000	3,956,000
Cotton	1914	3,120,000	*b* 1,275,000	41,512,000
	1913	3,067,000	1,311,000	79,107,000

a Tons.
b Bales.

MINERAL PRODUCTION. The entire mineral industry of the State is comprised in its clay resources, in the digging of sand and gravel, and the sale of some commercial mineral waters. The total value of the products in 1913 was $1,143,472, compared with $1,242,528 in 1912.

FINANCE. The report of the State Treasurer for the biennial period 1911–13 showed total receipts for the fiscal year ending Oct. 1, 1913, of $4,501,447. The expenditures for the same period amounted to $4,426,591. At the beginning of the fiscal year there was a balance of $572,047, and at its close, a balance of $325,856. The total debt of the State on Sept. 30, 1912, was $4,460,519. Of this, $2,341,671 was a special debt obligation to public trust funds. The funded debt consisted, in addition to the debt to trust funds, of several series of bonds, amounting to $1,506,899. The floating debt consisted of outstanding warrants and a temporary loan of $600,000. The per capita debt on the date given above was $2.41.

TRANSPORTATION. The total railway mileage in the State on Oct. 30, 1913, was 4350. The chief railroads, with their mileage, are as follows: Illinois Central, 389; Yazoo and Mississippi Valley, 314; Mobile and Ohio, 272; New Orleans, Mobile, and Chicago, 334; Mississippi Central, 164. The mileage of electric railways in the State on Jan. 1, 1913, was 107. There were 12 companies operating such railways in that year.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the State Charity Hospital at Jackson, the State Charitable Hospital at Vicksburg, the State Charity Hospital at Natchez, Beauvoir Home at Beauvoir, the State Insane Hospital at Asylum, the East Mississippi Insane Hospital at Meridian, and the Penitentiary at Jackson.

POLITICS AND GOVERNMENT. The Legislature met early in January, 1914, and remained in session until late in March. An act of general importance was the adoption of a State bank law providing for an inspection system and a tax on banks to provide a fund for paying depositors of failed banks. The State has heretofore lived under the appointive judicial system, but under a constitutional amendment previously adopted, district judges and chancellors were elected at the popular election in November. An amendment adopted at the 1914 session of the Legislature and submitted to the people at the same election, providing for the election of the Supreme Court judges also, was carried. These judges were increased from three to six. Other constitutional amendments were submitted by the Legislature and adopted at this election. One of these provided for the initiative and referendum, another reapportioned the senatorial districts. All the Congressmen were reëlected.

STATE GOVERNMENT. Governor, Earl Brewer; Lieutenant-Governor, Theo. G. Bilbo; Secretary of State, J. W. Power; Treasurer, P. S. Stovall; Auditor, D. L. Thompson; Superintendent of Education, W. H. Smith; Attorney-General, Ross A. Collins; Adjutant-General, D. M. Scales; Land Commissioner, M. A. Brown; Commissioner of Agriculture, H. E. Blakeslee; Commissioner of Insurance, T. M. Henry—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, S. Smith; Associate Justices, S. C. Cook and R. F. Reed; Clerk, George C. Meyers—all Democrats.

STATE LEGISLATURE, 1915. The State Legislature is wholly Democratic.

The representatives in Congress will be found under the section *Congress*, article UNITED STATES.

MISSISSIPPI, UNIVERSITY OF. A State institution for higher education, chartered in 1844 at Oxford, Miss. There are seven undergraduate courses, partly elective, leading to the bachelor's degree in arts, science, pedagogy, philosophy, mining and civil and electrical engineering. The university also maintains a law school, a medical department and a summer school, and confers the degrees of M.A. and Ph.D. The students in all departments in 1914 numbered 528, and there were 35 members of the faculty. The library contains about 25,000 volumes. The president is Joseph N. Powers, LL.D.

MISSISSIPPI FLOOD PREVENTION. See Flood Prevention.

MISSOURI. Population. The estimated population on July 1, 1914, was 3,372,886. The population in 1910 was 3,293,335.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only:

		Acreage	*Prod. bu.*	*Value*
Corn	...1914	7,200,000	158,400,000	$107,712,000
	1913	7,375,000	129,062,000	95,506,000
Wheat	..1914	2,549,000	43,338,000	42,466,000
	1913	2,315,000	39,586,000	33,252,000
Oats	1914	1,200,000	25,800,000	11,352,000
	1913	1,250,000	26,500,000	11,925,000
Rye	1914	17,000	288,000	207,000
	1913	16,000	240,000	180,000
Barley	..1914	5,000	120,000	78,000
	1913	5,000	110,000	66,000
Potatoes	.1914	87,000	3,915,000	2,858,000
	1913	85,000	3,280,000	3,004,000
Hay	1914	2,600,000	*a* 1,820,000	24,752,000
	1913	3,000,000	1,800,000	26,100,000
Tobacco	.1914	4,100	*b* 4,920,000	640,000
	1913	5,100	3,315,000	421,000
Cotton	..1914	122,000	*c* 75,000	2,336,000
	1913	112,000	67,000	3,697,000

a. Tons. *b* Pounds. *c* Bales.

Mineral Production. Missouri leads all other States in the production of two important metals, lead and zinc, and in the production of two relatively unimportant minerals, barytes and tripoli. The State also ranks second in the production of mineral paints. Based on the metallic content the total production of lead and zinc in 1913 was valued at $29,494,064, compared with $34,820,248 in 1912. The decrease in 1913 was almost entirely due to a smaller output of zinc ores, with a marketed decline in price. The mining of coal is third in importance among the mineral industries of the State. The coal output decreased from 4,339,856 short tons, valued at $7,633,864 in 1912, to 4,318,125 tons, valued at $7,468,308 in 1913. Missouri ranks seventh among the States in the total value of its clay products and second in the manufacture of fire brick, which is the principal clay product of the State. The total value of the clay products in 1913 was $6,602,076. The production of Portland cement is another important industry and the quarries produce large quantities of limestone. Other important mineral products are sand and gravel, lime, copper, iron ore, mineral paints, natural gas, petroleum, silver, and tripoli. The total value of the mineral products in 1913 was $54,001,008, compared with $58,332,550 in 1912.

Education. The total school population in 1913 was 954,699, with an enrollment of 690,484 and an average daily attendance of 494,309. The female teachers numbered 14,148 and the male 4706. The average salary of male teachers was $497.60 a year and of female teachers $485.44. On June 1, 1914, there were 167 first-class high schools, 49 second-, and 125 third-class, making a total of 341 approved high schools. Improvement in the high schools has been specially rapid in recent years.

Finance. The latest available reports of the State Treasurer are for the biennial period 1911–12. The total receipts during that period were $9,998,292, and the disbursements $6,518,122, leaving a balance in the treasury on Jan. 1, 1913, of $537,829. The State debt on that date was $4,398,839.

Transportation. The total mileage of steam railways in the State in 1913 was 8147. There were in addition 847 miles of electric railways. There was practically no construction of new railroad mileage during 1914.

Charities and Corrections. The charitable and correctional institutions are under the supervision of the State Board of Charities and Corrections and include hospitals at Fulton, St. Joseph, Nevada, and Farmington; the Industrial School for Girls at Chillicothe; Training School for Boys at Boonville; Colony for Feeble-minded and Epileptic at Marshall; Missouri School for the Deaf at Fulton; Missouri School for the Blind at St. Louis; Federal Soldiers' Home at St. James; Confederate Soldiers' Home at Higginsville; State Sanatorium at Mt. Vernon; and the State Penitentiary at Jefferson City. Cities of 500,000 or more inhabitants are permitted to create a board of children's guardians to manage public institutions of the city for delinquent, dependent, or defective children. In counties with a population of 50,000 or more, juvenile courts for children under 17 are established.

Politics and Government. The State Legislature did not meet in 1914 as the sessions are biennial and the last was held in 1913. Elections were held in 1914 for United States Senator and for representatives in Congress. Senator Stone, whose term practically expired March 4, 1915, was a candidate for reëlection and he was renominated in the nominating primaries held on August 4. The Republicans nominated T. J. Akins and the Progressives A. N. Sager. In the elections of November 3 Senator Stone was reëlected with 311,573 votes, Akins received 257,056, and Sager, Progressive, 27,614. The total vote cast was 618,194, compared with 698,562 in 1912. The Democratic vote showed a falling off of about 10,000; the Republican an increase of about 50,000; and the Progressive a falling off of nearly 20,000. The Republicans elected a representative in the tenth and twelfth districts and in the other districts the Democrats were successful. On June 19, L. C. Dyer, Republican representative to Congress, was unseated on the ground of fraud in connection with his election and his seat was given to Michael Gill, his Democratic opponent. A prohibition amendment to the constitution was defeated in the election of November 3. The vote against the amendment was about 4 to 1 in the cities and nearly 3 to 1 in the rural districts. On April 7, Henry L. Jost, Democratic Mayor of St. Louis, was reëlected, defeating a nonpartisan ticket pledged to a commission form of government. On July 1 the voters of St. Louis adopted a new charter, centralizing power in the mayor and comptroller and providing for the recall of elective officials.

State Government. Governor, Elliott W. Major; Lieutenant-Governor, W. R. Painter; Secretary of State, Cornelius Roach; Auditor, John P. Gordon; Treasurer, E. P. Deal; Attorney-General, John T. Barker; Superintendent of Education, Howard A. Gass—all Democrats.

Judiciary. Supreme Court: Chief Justice, Henry Lamm, Republican; Associate Justices: Walter W. Graves, Democrat; A. M. Woodson, Democrat; H. W. Bond, Democrat; C. B. Faris, Democrat; R. F. Walker, Democrat; John C. Brown, Republican; Clerk, J. D. Allen, Democrat.

State Legislature, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	26	76	102
Republicans	8	65	73
Progressive	0	1	1
Democratic majority	18	10	28

The representatives in Congress will be found in the section *Congress*, article United States.

MISSOURI, University of. A State university for higher education, founded at Columbia, Mo., in 1839. The total number of students enrolled in the autumn of 1914 was 2605. The faculty numbered 262. During the year Herbert J. Davenport was appointed dean of the school of commerce; Elmer J. McCaustland, dean of the school of engineering; and Eldon R. James, dean of the school of law. No noteworthy benefactions were received during the year. The productive funds of the university amount to about $1,280,000, and the approximate annual income from all sources was $1,100,000. The library contains 165,000 volumes and pamphlets. The president is Albert R. Hill, LL.D.

MISTRAL, Frédéric. A French poet, died March 25, 1914. He was born at Maillane, near St. Remy, Sept. 8, 1830, and practically all his life was spent in a peasant's cottage in the same town. He was educated at a boarding school in Avignon, and afterwards studied law, but soon abandoned it for literature. He was first attracted to the charm of the Provençal dialect by the songs which his mother sang, although in his boyhood, Provençal was used only in comic speech and writing. One of the teachers at the school in Avignon was Roumanille, who was the first of the Rhone poets to realize that the ancient tongue of the country was beautiful, and with him Mistral worked for years to raise the speech to the dignity of a literary language. At the age of 17, five years before he had graduated in law at Aix University, Mistral began a poem in four cantos, entitled "Li Meissoun" ('The Home'). After his graduation his father gave him the privilege of choosing a career, and he at once decided to devote his life to revealing the beauties of the Provence language. In 1854 he, with six other poets, founded the society which became famous as the Felibrige, for the purpose of restoring among the people of the Rhone valley a love of ancient customs, language, and traditions. They began by starting an annual publication, the *Armena Prouvencau*, which appeared regularly from 1855.

The Felibrige expanded into a great society with Mistral as its first president, and had great influence and effect throughout all Southern France. Floral games were founded, patriotic enthusiasm ran high, and the name of Mistral was linked with Petrarch when the latter's centenary was celebrated at Avignon in 1874.

In 1859 Mistral completed the long rustic poem entitled "Mireio"; a simple tale of a poor girl and a rich lover, into which Mistral wove descriptions of Provençal life, scenes, and character. This poem is generally considered to be his best work and it immediately made him famous, being crowned by the Academy, and turned into the opera *Mireille*, by Gounod. After laboring for seven years Mistral produced in 1866, "Calendau," which was his own favorite among all his poems, but compared with "Mireio" it lacked spontaneity. In the interval between "Mireio" and "Calendau" he published many shorter poems, which in 1875 were combined under the title *Lis Isclo d'Or* ('The Golden Islands').

Mistral's third long poem, "Nerto," was published in 1884, and received the Prix Vitet from the French Academy. After its publication he was induced to go to Paris, where he was welcomed by President Grévy, and literary societies of the city competed in a series of banquets in his honor. Mistral soon wearied of these festivities and returned to his cottage, where four years later he completed *Lou Tresor dou Felibrige*, a dictionary of all the dialects of the *langue d'oc*, which contained every word and phrase, proverb and legend that the poet had gathered through many years. His only dramatic work, *La Reino Jano*, appeared in 1890, and his last long poem, "Lou Poemo dou Rose" ('The Poem of the Rhone'), in 1897. The latter work, in which Mistral used blank verse for the first time, was a narrative of former barge life on the river, interspersed with many legends. In 1904 he again went to Paris and reluctantly accepted the Nobel prize for literature, the proceeds of which he used in helping to establish a museum of Provençal history. In 1897 he was privately informed that he would be elected to the French Academy if he would present himself, but he declined to go to Paris for this purpose.

Until a serious illness overtook him in 1912, Mistral was of most impressive personal appearance; his great form and handsome face were as notable as his lack of affectation and his simplicity of life. He was one of the few persons to whom a statue was erected during their lifetime. He was one of the most popular of all living Frenchmen. In a great many French towns streets are named after him, and Mistral societies in France are almost without number. Lamartine gave to him the title, "The Homer of Provence." He made his last great public appearance in the Felibrige in May, 1913, at the festival of Saint Estelle at Aix-en-Provence. The festival was held at this place because it was near enough to Maillane to enable Mistral to spend a day there without too much fatigue. He was given an extraordinary reception, and when he sang his "Song of Our Ancestors," his audience was deeply moved.

MITCHELL, Silas Weir. An American neurologist, novelist, and poet, died Jan. 4, 1914. He was born in Philadelphia in 1829, and was educated in the grammar school of that city, and at the University of Pennsylvania; he did not, however, graduate from the latter institution because of illness during his senior year. His medical studies were taken at the Jefferson Medical College, Philadelphia, where in 1850 he received the degree of M.D. He at once began the practice of his profession in Philadelphia, and at the same time pursued special studies on medical topics and wrote papers on the results of this work. Devoting particular attention to snake venoms and their chemical nature, in 1860 the Smithsonian Institution published his volume entitled *Researches Upon the Venom of the Rattlesnake*. In his leisure moments the young physician had begun the writing of verses which he collected in 1856. Shortly after their publication he visited Oliver Wendell Holmes in Boston, who advised the younger physician to withdraw the verses and to reconsider them when he had reached the age of 40, and also urged Dr. Mitchell to follow either medicine or literature, but not to attempt to combine the two. Accepting this advice, Dr. Mitchell returned to Philadelphia and for a time devoted himself to his medical practice, becoming in 1862 an army surgeon, and assuming special charge of soldiers suffering from nervous disorders and injuries which directly affected the nerves. In this work he spent three years in the Turner's Lane Hospital in Philadelphia, and induced Surgeon-General Hammond to establish wards for nervous diseases, said to have been the first of the sort in the United States. Experiences during this work he described in his novel, *In War Time*, and the technical results of his studies in the hospital appeared in 1864 under the title, *Gunshot Wounds and Other Injuries of the Nerves*. At the close of the war, determining to devote himself to neurology, he first developed the "rest cure," which became known as the "Weir Mitchell treatment" for nervous disorders, and found great favor among physicians both in the United States and in Europe.

His inclination for the writing of fiction led him to use for a short story, material which he had gathered in the hospital. The story was the result of a discussion with other physicians regarding the effects on a man's individuality of the loss of members. He wrote out, without intending it for publication, a history of an imaginary case in which the patient had had both arms and legs amputated. This manuscript was shown by a friend to Dr. Edward Everett Hale, who was at that time connected with the *Atlantic Monthly*. Dr. Hale obtained permission to publish it, and it was printed in the *Atlantic* under the title of "The Case of George Dedlow." The story aroused great interest; its readers assumed that it was a narrative of real life, and many subscriptions were sent for the aid of the unfortunate "Dedlow." For the next twenty years Dr. Mitchell's writings were connected almost entirely with his medical studies. In 1873 he published *Wear and Tear;* in 1875, *Rest in the Treatment of Disease*, explaining in detail his "rest cure"; and he also made a more extensive study of snake poisons, the results of which were published in 1886. A succession of medical volumes relating chiefly to nervous disorders, concluding with *Rest Treatment and Psychic Medicine*, were published in 1908. In the late seventies Dr. Mitchell had attained a place in his profession which he considered entitled him to indulge his desire to write fiction and verse as a recreation. In 1880 he published two books, *Hephzibah Guinness* and *Thee and You*. From that time until the year of his death he wrote novels and juveniles at intervals of a year or two, with short stories between. In 1896 he again collected his poems and this time published them, forty years after he had been advised by Dr. Holmes to reconsider his earlier efforts after he became more mature. Dr. Mitchell first attained popular success with *Hugh Wynne, Free Quaker* (1897), which is considered by many the best historical novel ever written by an American. Dr. Mitchell was 68 years old at the time of its publication, and from this time he occupied a leading place among contemporaneous American novelists. Other books were: *The Adventures of François* (1899); *Dr. North and His Friends* (1900); *The Autobiography of a Quack* (1901); *The Wager* (1900); *Constance* (1901); *Pearl* (1901); *Comedy of Conscience* (1902); *Little Stories* (1903); *Youth of Washington* (1904); *Constance Trescott* (1905); *A Diplomatic Adventure* (1905); *The Mind Reader* (1907); *A Christmas Venture* (1907); *The Red City* (1907); *The Comfort of the Hills* (1909); *John Sherwood, Ironmaster* (1911); *Westways* (1914); *Complete Poems* (1914). All this writing was done in the summer at Dr. Mitchell's seashore place at Bar Harbor, the greater part of the remainder of the year being occupied by his profession. Dr. Mitchell was one of the most notable social figures in Philadelphia, and at his home he entertained many foreign and American persons of distinction. He received the degree of LL.D. from Harvard, Edinburgh, Princeton, and Toronto Universities, and from the Jefferson Medical College, also an honorary degree of M.D. from the University of Bologna. He was a member of many medical, scientific, and literary societies.

MOGULESKO, Zigmund. A Jewish comedian, died Feb. 4, 1914. He was born near Moscow in 1859, and while still a very young man went on the stage, becoming, at 22 years of age, leading man in a Yiddish stock company in Odessa. The plays given by the company displeased the government, and while the company was on tour in the Balkans, its theatre in Odessa was torn down. As he was unable to continue his work in Russia, Mogulesko removed to the United States in 1886. There was at that time no Yiddish theatre in New York, and his first task was to arouse interest in such an undertaking. He finally succeeded, became the leading character actor in the new field, and was perhaps the most popular Hebrew actor in America at the time of his death. He was also a composer and a poet, and composed many of the Yiddish songs sung in the United States. All his work was done in Yiddish—in fact he never learned English.

MOLTKE, Helmuth von. See War of the Nations.

MONACO. A hereditary constitutional monarchy (constitution of Jan. 8, 1911) covering 1.5 square kilometers and having a population of 19,121. The town of Monaco has 2410 inhabitants, La Condamine 6218, Monte Carlo 3794. There is no cultivation. The revenue, principally derived from the gambling concession at Monte Carlo, is disbursed largely for improvements. Reigning Prince (1914), Albert, born 1848, succeeded to the throne 1889. Heir-apparent, Prince Louis, born 1870.

MONEY. According to the report of the Treasurer of the United States the monetary stock of the country on June 30 was $3,738,288,000. Of this $1,890,656,000 were gold coin and bullion; $565,833,000, silver dollars; $182,006,000, subsidiary silver; $346,681,000, United States notes (greenbacks); $2,439,000, Treasury notes (Sherman notes of 1890); $750,671,000, National Bank notes. Of the metallic money $1,796,686,000 was in the Treasury; of this more than two-thirds was gold coin and bullion. On the other hand nearly all of the notes were in circulation. Moreover the metallic money in the Treasury was offset by gold certificates to the amount of $1,026,149,000 and silver certificates to the amount of $478,601,000 in circulation. The total money in circulation was $3,402,015,000, or $34.35 per capita. Of this sum nearly $834,986,000 was in the form of metal, and the remainder in notes or certificates. The average cost of maintaining this paper, including the making, issue, and redemption was computed at $61.04 for every 4000 notes. The average lifetime of the greenback is computed to be 3.25 years, of the silver certificate 1.28 years, and of the National Bank notes 2.76 years.

The Federal Reserve Act of Dec. 23, 1913, modified the Aldrich-Vreeland Act by extending it to June 20, 1915, and otherwise. Under this large amounts of emergency currency were held in the various subtreasuries, with the result that on August 3 following the outbreak of hostilities in Europe sufficient currency was at once issued to meet the unusual situation. The Secretary of the Treasury had informed the public on July 31 that $500,000,000 of the emergency notes were ready for issue. The country was at once organized into 44 national currency districts and associations. New York City banks during August, September, and October issued $141,228,000 of emergency currency. During the same period other national banks issued $228,330,000 of such notes. The only States in which emergency currency was not issued were: Maine, Vermont, Rhode Island, Delaware, South Dakota, Montana, Wyoming, Idaho, Nevada, and Arizona. See BANKS AND BANKING; COINS.

MONGOLIA. See CHINA.

MONOPLANES. See AËRONAUTICS.

MONROE DISASTER. See SAFETY AT SEA.

MONTANA. POPULATION. The estimated population on July 1, 1914, was 432,614. The population in 1910 was 376,053.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	50,000	1,400,000	$11,064,000
	1913	28,000	882,000	679,000
Wheat	1914	910,000	18,356,000	16,704,000
	1913	870,000	20,678,000	13,644,000
Oats	1914	530,000	18,550,000	7,234,000
	1913	500,000	21,750,000	6,960,000
Rye	1914	10,000	210,000	147,000
	1913	10,000	210,000	116,000
Barley	1914	70,000	2,135,000	1,132,000
	1913	60,000	1,860,000	893,000
Potatoes	1914	37,000	5,180,000	3,315,000
	1913	36,000	5,040,000	3,377,000
Hay	1914	700,000	*a* 1,750,000	15,225,000
	1913	660,000	1,188,000	11,405,000

a Tons.

MINERAL PRODUCTION. Montana ranks tenth among the States in the total value of its mineral products, and its chief mineral industry is the mining and smelting of copper. As a producer of this metal Montana ranks second among the States, Arizona being first. Montana's total production of copper from the time mining first began exceeds that of any other State. The output to the close of 1913 amounted to nearly 6,200,000,000 pounds, somewhat more than one-third of the total production of the United States. In 1913 the production showed a considerable decrease. In that year it was 287,828,699 pounds, valued at $44,613,448, compared with 309,738,873 pounds, valued at $51,106,914 in 1912. Montana is essentially a metal-producing State, the values of its copper, gold, silver, zinc, and lead representing in 1913 over 89 per cent of its total production. The mining and smelting of zinc ores in Montana showed a marked increase in 1913, compared with previous years, and zinc became third in importance among the metallic products of the State. The recoverable contents of zinc in the ores mined in 1913 amounted to 44,337 tons, valued at $4,965,693, compared with 13,459 tons, valued at $1,857,403 in 1912. The production of gold in 1913 was valued at $3,492,432, compared with $3,625,235 in 1912. The production of silver in 1913 was 13,819,201 ounces, compared with 12,731,638 ounces in 1912. The lead production increased from 7,446,749 pounds in 1912, to 10,935,827 pounds in 1913. The output of the mines of the State in 1914 was seriously affected by the conditions of the copper market due to the European War, as Montana is primarily a copper producer. The value of gold, silver, copper, lead, and zinc in the mines of the State, according to the estimates of the United States Geological Survey, decreased from nearly $62,000,000 in 1913, to about $48,000,000 in 1914. The decrease in copper was large, and that of silver was notable, but there were considerable increases in gold, lead, and zinc. The value of the silver and copper yield was greatly reduced on account of the great decline in prices of these metals in 1914. The copper output decreased from 287,828,699 pounds, to about 238,000,000 pounds, or over 17 per cent. The gold output increased over 14 per cent; silver decreased about 13 per cent; lead increased from about 11,000,000, to about 15,000,000 pounds; and zinc increased nearly 23 per cent. The production of coal in 1913 was 3,240,973 short tons, valued at $5,653,539. This is a record figure for the industry in the State. The production of coal in the State, according to the estimates of the United States Geological Survey, decreased from 3,365,712 short tons in 1913, to 2,938,671 tons in 1914. The total value of the mineral products showed a decrease from $71,620,873 in 1912, to $69,307,056 in 1913, the increase in other products not being sufficient to overcome the decrease in the output of copper.

EDUCATION. The total number of persons of school age in the State in 1914 was 126,417, the total enrollment being 85,517, and the average daily attendance 60,972. There were 3763 teachers employed, and the average salary of male teachers was $106.85 per month and of female teachers $87.24 per month.

FINANCE. The report of the State treasurer shows a cash balance on Nov. 30, 1913, of $1,039,794. The receipts for the fiscal year 1914, were $5,550,909, and the disbursements $5,207,011, leaving a balance at the end of the year of $383,646.

TRANSPORTATION. On Nov. 1, 1914, the steam railways of the State had a total mileage of 4783. During the year 395 miles of track were constructed by the Great Northern, the Chicago, Milwaukee, and St. Paul, the Northern Pacific, the Minneapolis, St. Paul, and Sault Ste. Marie, and the Billings and Central Montana railways. The Great Northern has the longest mileage, 1012; the Northern Pacific, 993; and the Chicago, Milwaukee, and St. Paul, 748. These figures are for main track only.

Charities and Corrections. The charitable and correctional institutions under the supervision of the State Board of Charities include the State Prison at Deer Lodge; the State Industrial School at Miles City; a home for orphans, foundlings, and destitute children at Twin Bridges; a Soldiers' Home at Columbia Falls; the State Hospital for the Insane at Warm Springs; and the State School for the Deaf and Blind and Feeble-minded at Boulder.

Politics and Government. The State Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. There was little of political interest in the State aside from the relation of the State government to strikes. The election held on November 3 was for representative-at-large. The Democrats were successful in electing their candidate with 37,012 votes, compared with 26,046 for the Republican candidate and 6166 for the Progressive. The total vote cast was 81,502, compared with 79,826 cast in 1912. The Democratic vote showed a falling off of about 10,000; the Republican an increase of about 8000; and the Progressive a falling off of about 16,000. A prohibition amendment was carried in this election. On September 6, Mayor Lewis J. Duncan, of Butte, was removed from office after trial in the District Court for neglect of duty in connection with miners' riots.

State Government. Governor, Sam. V. Stewart, Democrat; Lieutenant-Governor, W. D. McDowell, Democrat; Secretary of State, A. M. Alderson, Democrat; Attorney-General, D. M. Kelly, Democrat; Treasurer, W. C. Rae, Democrat; Auditor, W. Keating, Democrat; Superintendent of Public Instruction, H. A. Davee, Democrat.

Judiciary. Supreme Court: Chief Justice, Theo. Brantley, Republican; Justices, Sydney Sanner, Democrat; Wm. L. Holloway, Republican; Clerk, John T. Athey, Republican.

Vote of the State since 1904.

	Dem.	*Rep.*	*Soc.*	*Proh.*	*Plu.*	
1904 Governor..	35,377	26,957	3,431	...	8,420	D
1908 President..	29,326	32,333	5,855	827	3,007	R
1908 Governor..	32,282	30,792	5,112	...	1,490	D

The representatives in Congress will be found in the section *Congress*, article United States.

MONTANA, University of. A State institution for higher education, founded at Missoula, Mont., in 1893. The total enrollment in all departments in 1914 was 861, and the faculty numbered 80. The university includes departments of literature, science and the arts, schools of law, pharmacy, forestry, journalism, music, domestic science, commerce, accounting, and education; there is also a department of correspondence study, a university extension department, and a bureau of public information. The annual income amounts to about $200,000 and the value of property is about $350,000. The library contains about 25,500 volumes. The president is Edwin B. Craighead, LL.D.

MONTEFIORE HOME. See Architecture, section on *Hospitals and Homes.*

MONTENEGRO. A European hereditary constitutional monarchy; one of the Balkan States. Area, previous to the wars in the Balkans, 9080 square kilometers, or 3506 square miles. By the treaty of Nov. 12, 1913, the new Serbo-Montenegrin frontier was defined. It is separated on the west from the Adriatic by the strip of Austrian territory forming the extremity of Dalmatia, excepting in the recently acquired districts of Antivari and Dulcigno, where it possesses a seaboard extending about 28 miles. The new area is estimated at 5603 square miles. The original population numbered about 285,000, that of the new territory roughly estimated at 150,000. Cettinjé, with 5300 inhabitants, exclusive of military, is the capital. Other towns are Podgoritsa, with 10,053 inhabitants; Dulcigno, 5081; Nikšic, 4972; Antivari, 2371; Diakovitsa, in the new territory, has 14,050 inhabitants.

Montenegro is a mountainous, wooded country with cultivable tracts where agriculture is carried on; considerable herds roam the mountain pastures. Cereals are grown, as well as tobacco, potatoes, and vines. There are reported to be in the country about 500,000 sheep and goats, 60,000 cattle, etc. Imports and exports for the year 1911 were valued at 8,167,000 and 2,392,000 kronen respectively. The export of hides was valued at 380,000 kronen, wool at 259,000, horses 275,000, cattle 211,000, olive oil 333,000, and sheep 108,000, etc. Austria-Hungary is the most important country of import, with Turkey second, and Italy third. Estimated revenue 1912, 3,609,000 kronen; expenditure, 4,187,126. The public debt amounts to 9,500,000 kronen at 5 per cent. Reigning sovereign Nicholas I, born 1841, succeeded to the throne 1860. Heir-apparent, Prince Danilo, born 1871. The Prime Minister in 1914 was Gen. Janko Vucotich, appointed May 8, 1913; Minister for Foreign Affairs, M. Plamenatz.

Army. Military service in Montenegro is compulsory, and each able-bodied citizen is liable from 18 to 62 years of age, of which 33 years are spent in the active army and 10 years in the reserve. The active army is in reality a national militia, where the constituent units are grouped by tribes and districts, and the recruits joining at 18 years of age for two years have 60 days of instruction and 15 days of maneuvers a year, unless for financial reasons the amount of service has to be reduced or war is in progress. In the active army the men are from 20 to 52 years of age, and the annual period of service is from 10 to 15 days, while the second class is made up of men unavailable for the first and serving four days a year. The approximate effective strength of the army was given as 37,000 men, the field army previous to the Balkan wars being at most from 40,000 to 44,000 men, 146 guns, and 44 machine guns. The army is organized into 4 divisions, each comprising 2 or 3 brigades, 1 battery of field artillery, 1 battery of howitzers, 1 company of engineers, and 1 platoon of couriers. Montenegro participated with the Balkan allies in the war of 1912, and in August, 1914, having declared war on Austria and Germany, was able to have 4 divisions available for the field. The various battalions which numbered originally in all about 62, were grouped in 4 districts as follows: Cettinjé, 17 battalions; Podgoritsa, 13 battalions; Nikšic, 14 battalions; and Kolaschine, 18 battalions. This number doubtless was increased with the new territory resulting from the Balkan War and with the forces put into the field in 1914, whose strength was estimated at a maximum fighting force of 50,000.

The battalion varied in strength from 400 to 800 men, and usually there were 4 guns or machine guns to a battery or section. The guns and other weapons were of various makes.

By their strong sympathy with Servia, and by their national ambitions, the Montenegrins were drawn into the War of the Nations (q.v.), declaring war on Austria-Hungary, August 8, and on Germany, August 12.

MONTESSORI METHOD. The widespread interest that exists regarding the educational method of Dr. Maria Montessori, docent in the University of Rome, dates from the appearance of certain popular magazine articles in the fall and winter of 1911–12. At about the same time The House of Childhood was incorporated in New York for the purpose of manufacturing and selling the apparatus required by the method, and shortly afterward the American edition of *The Montessori Method* was published. During 1913 a national association, composed of many persons of prominence in educational and social work, was organized for the purpose of extending the knowledge of the method. During the past three years, many American teachers and parents have visited Rome for the purpose of studying the method, and there have been few educational meetings that have not given the subject some place on their programmes. So pronounced has been the interest of laymen that several popular magazines have printed articles bearing upon Madam Montessori's work.

The use of the method in the United States is still in the experimental stage. In general only private schools have adopted it, and among these, few attempt to follow completely the methods advocated by Madam Montessori. The supply of teachers who are qualified to use the method is very limited, because there is no authorized institution for the training of such teachers, except the Institute that Madam Montessori has conducted in Rome. The influence of this method, however, must not be judged by the number of teachers who claim that they are using it. Madam Montessori's writings and lectures have served to focus attention upon some of the fundamentals of education from a new point of view, and this constitutes her chief contribution.

Madam Montessori's training and experience had been such as to lead her to consider a "new and scientific pedagogy." She was the first woman ever granted the degree of Doctor of Medicine from the University of Rome. She was for a time Assistant Doctor in the Clinic of Psychiatry, and for two years prior to 1900 she conducted a school for feeble-minded children. In 1906 she was invited to take charge of the educational work in certain of the poorer sections of Rome, where a Real Estate Institute was attempting to reform conditions. In this position she worked with normal children, and here it was that she attracted the attention of educators in Europe and America. In all of her efforts she maintained a scientific attitude toward the problems of education.

In the scientific pedagogy that Madam Montessori attempts to establish, the activity of the child is regarded as the phenomenon that is to be observed and interpreted. In order that the child's activities may be of scientific value, he must be free to act in a natural manner. She says, "If a new and scientific pedagogy is to arise from the *study of the individual*, such study must occupy itself with the observation of *free* children." The duty of the teacher both as regards discipline and instruction is to observe rather than to direct. Concerning discipline, she says, "The liberty of the child should have as its *limit* the collective interest; as its *form*, what we universally consider good breeding. We must, therefore, check in the child whatever offends or annoys others, or what tends toward rough or ill-bred acts. But all the rest—every manifestation having a useful scope—whatever it be, and under whatever form it expresses itself, must not only be permitted, but must be *observed* by the teacher."

In order that children may properly direct their own activities, Madam Montessori provides them with a variety of materials which she permits them to use only for the one purpose for which it was designed. Since these materials take the place of the old-time teacher, they are called "didactic materials," or teaching materials. Among the first of these materials that are given to the children are wooden blocks in which there are holes of varying sizes and depths. Cylinders are fitted to these holes. All of the cylinders are removed and the child is encouraged to replace them. If he fails to place each cylinder in its proper opening, his mistake will become evident to him. "The didactic material *controls every error*. The child proceeds to correct himself." The use of the material in the way indicated "provokes auto-education." From time to time the children are given different pieces of the didactic material which they use in the prescribed way, until they become very skillful in its manipulation.

In dealing with feeble-minded children, Madam Montessori, in common with others, found that sense education for such children was essential. She, however, goes further than any other teacher in the belief that sense education is equally valuable for normal children. She insists upon a systematic, even formal, education of the senses, and she accomplishes this by means of the didactic material. The sense discrimination shown by children in the Montessori schools seldom fails to make a marked impression upon the visitor.

The schools in which Madam Montessori first tried her method with normal children were a part of a social improvement effort. Accordingly much emphasis was placed upon those school activities that might be helpful in the home. The children learned to button and lace their clothes, to wash and carry dishes, and to prepare and serve their lunches in the schoolroom. Since such activities are well adapted for exercises in muscular control, they are of value for children of all classes, and they, therefore, form an important feature of the method.

The distinctive features of the Montessori method are its insistence upon muscular training and sense education. The part of the method which has received greatest attention, however, is that which relates to the teaching of the school arts. Credit for the ease with which children are said to learn to write and to read is given to the use of the didactic material. The actual methods employed in teaching these subjects do not differ greatly from those in common use, except in the case of writing, in which subject there is direct preparation by the use of the didactic material.

A number of books and articles dealing with the Montessori method have been published, among them: Maria Montessori, *The Montessori Method;* Dorty Canfield Fisher, *A Montessori Mother;* S. A. Morgan, *The Montessori Method, An Exposition and Criticism;* Ellen Yale Stevens, *A Guide to the Montessori Method;* William H. Kilpatrick, *The Montessori Method Examined.*

MONTSERRAT. A West Indian island; a presidency of the Leeward Islands colony (q.v.). The island is covered with forested mountains, and is considered to have the most healthful climate found in the Antilles. An attempt is being made to revive the coffee and cacao industries. The cultivation of cotton has superseded that of sugar, the export in 1912 amounting to 289,234 pounds of lint, valued at £19,356. The principal product for export is limejuice; there are about 12,000 acres planted to lime trees. In 1912 there were exported 128,857 gallons of raw and 4527 concentrated limejuice, and 34 tons of citrate of lime; total value, £42,052. Total imports 1912, £40,526 (£44,795 in 1911); exports, £42,053 (£55,930). Revenue 1912–13, £11,932 (£12,945 in 1911–12); expenditure, £10,556 (£10,030). Public debt Dec. 31, 1912, £11,100. Customs revenue, 1912–13, £8376. Commissioner 1914, Lieut.-Col. Wilfred B. Davidson-Houston. Plymouth, the capital, has 1534 inhabitants. See LEEWARD ISLANDS.

MORATORIUM. See FINANCIAL REVIEW.

MORAVIAN CHURCH. See MORAVIANS.

MORAVIANS, also called UNITED BRETHREN (*Unitas Fratrium*), and the MORAVIAN CHURCH. There are two bodies of Moravians in the United States, but only one of numerical importance. The smaller body is called the Union Bohemian and Moravian Church. It numbered in 1914, 1000 communicants, 21 churches, and 4 ministers. The main denomination numbered in the same year 19,463 communicants, 122 churches, and 142 ministers. Missions are maintained in nearly all parts of the world, and the educational institutions under the control of the Moravians have a high reputation for efficiency. The latter include the Moravian College and Theological Seminary, the Moravian Parochial School for Boys and Girls, and the Moravian Seminary for Girls at Bethlehem, Pa.; Linden Hall Seminary for Girls at Lititz; Nazareth Hall for Boys at Nazareth, Pa.; and an academy for girls at Salem, N. C. Moravians are strongest in Pennsylvania.

MOROCCO. An African sultanate under French protection by virtue of the treaty of March 30, 1912; the largest of the Barbary States. The area of the French protectorate is given at 416,800 square kilometers, with an estimated population of 3,000,000. The Spanish concessions cover about 21,800 square kilometers, with about 404,000 inhabitants; Tangier, which is to be internationalized, has 600 square kilometers, and 60,000 inhabitants. Fez is the capital, with 101,820 inhabitants; Morocco (Marakesh), 60,034; Rabat, 47,144; Tangier, 46,270. The inhabitants are chiefly Berbers, Bedouins, and Mued Arabs and Tuaregs, and belong to the Malekite sect of the Sunnite Mohammedans.

The principal industries are agriculture and grazing. The mineral resources are undeveloped. There is a limited manufacture of carpets and slippers. The principal products and exports in 1912 were barley, 19,332,000 francs; legumes, 7,113,000; wheat, 6,579,000; eggs, 6,125,000; flax, 5,005,000; hides and leather, 4,764,000; almonds, 4,127,000; cattle, 2,327,000; wool, 1,580,000; corn, 1,201,000; canary seed, 1,224,000; slippers, 1,078,000; total export, 75,047,000 francs. Total import, 152,497,000 francs. Vessels entered in the 1912 trade, 3679, of 2,921,000 tons.

Reigning Sultan, Mulai Yussuf, proclaimed at Fez, Aug. 17, 1912, upon the deposition of his brother, Mulai Abd-el-Hafid. There is a French resident commissioner-general; a Spanish high-commissioner resides at Tetuan.

HISTORY

FRENCH MILITARY OPERATIONS. The French forces in the French Moroccan Protectorate energetically pushed forward the building of telegraphs, roads, and bridges, and at the same time carried on a series of vigorous military operations against the restless native tribes. The most important event of the year was the occupation of Taza. A glance at the map will show that Taza, lying to the north of the Middle Atlas region, commanded the narrow strip of "unpacified territory" which still separated the French occupied zones of the west and of the east. From Algeria the French gradually had been extending their power westward into the heart of the Moroccan mountain country; while from the western coast of Morocco, where in 1908 France held only isolated posts at Mogador, Mazagan, Casablanca, and Rabat, a similar advance had been made, bringing Fez (1911), Tadla, Marakesh, and Demnat under French rule. At its narrowest point, at Taza, the unoccupied strip of territory was only 30 miles wide. The practically bloodless capture of Taza on May 9, 1914, by a rapid and stealthy march of General Baumgarten's column from Mçoun, was the culmination of the French campaign, for it opened up communication between the eastern and western spheres of occupation. It would now be possible to fill up the gap between the railway which led from Casablanca and Rabat on the Atlantic Coast eastward by way of Fez and the railway which joined Mçoun with Algeria and Tunis to the eastward. Fifteen miles northwest of Taza, General Baumgarten was met, on May 16, by General Gouraud, who had approached Taza from the opposite direction, that is, from the west. The Berber tribesmen of the Zaaian Confederation so bitterly resented the French occupation of Taza, and manifested such an alarming spirit of hostility, that the French in June sent out three armies against them. The capture of the Zaaian stronghold of Khenifra by the French forces seemed to quiet the tribes for a time; but in November the garrison which the French had left in Khenifra was fiercely assailed by Moha Ou Mamou and might have been compelled to surrender but for the timely arrival of Brigadier General Henry with 7000 troops from Fez, and Colonel Duplessis with 3500 troops from the territory of Zeedla.

In December despatches from London stated that the British government had formally recognized the French protectorate over Morocco as formulated in the Franco-Moroccan treaty of 1912.

SPANISH ZONE. Early in February the Spanish General Bereger led a column of native troops out from Tetuan on a punitive expedition; in returning he was so violently attacked by a party of Moors that he effected his escape only with the greatest difficulty, after losing 21 killed and 26 wounded. In March General Marina, the Spanish commander, and General Lyautey, the French commander, met in consultation, presumably with a view to concerted action in the pacification of Morocco. In March also France and Spain jointly relinquished their privilege of consular jurisdiction over their nationals in Morocco, who were henceforth to be tried by ordinary courts. In April a Spanish officer by the name of Del Valle was seized and detained by Moors of the Anjera tribe. Recurrent reports of Moorish insurrectionary activities indicated that the work of "pacification" was not being prosecuted with the same vigor in Spanish as in French Morocco.

MORPHINE. See COCAINE AND OPIUM HABIT.

MORTALITY STATISTICS. See VITAL STATISTICS.

MOSQUITO. See MALARIA; TROPICAL DISEASES.

MOTHERS' PENSIONS. See PENSIONS FOR MOTHERS.

MOTOR BOATING. See YACHTING.

MOTOR FIRE APPARATUS. See FIRE PROTECTION.

MOUNT HOLYOKE COLLEGE. An institution for higher education of women, founded at South Hadley, Mass., in 1837. The students enrolled in all departments of the college in the autumn of 1914 was 797. The faculty numbered 90 and the administrative staff 43. There were no notable changes in the faculty during the year and no noteworthy benefactions were received. The productive funds of the college in 1914 amounted to $1,311,271, and the income to $61,502. There were 56,000 volumes in the library. The president is Mary E. Woolley, M.A.

MOVING PICTURES. See DRAMA, *Photoplays.*

MOVING PICTURE THEATRES. See ARCHITECTURE.

MUIR, JOHN. American naturalist and writer, died Dec. 24, 1914. He was born in Dunbar, Scotland, in 1838. When he was eleven years of age he came with his parents to the United States and went with them into the Wisconsin woods, where he helped his father clear the land, and here began the studies of nature which he continued throughout his life. During these early years he showed unusual talent for invention and turned out many ingenious contrivances made of wood, including a clock, safety lock, and other articles. In 1860 he took his wooden inventions to be exhibited at the State fair in Madison, where they attracted much attention and were described in the newspapers, but he would not reveal his identity, as his father had warned him against the evil effects of praise. While at Madison he learned that for $1 a week he could study at the State University, and for four years he worked there, supporting himself by labor in the fields and school teaching. At this time an accident almost deprived him of the sight of his right eye, but as the eye grew stronger and he was able to read, he started on a long tramp, sleeping in the open and gathering plant specimens, walking through Kentucky, Tennessee, Georgia, and Florida. From the latter State he went to Cuba intending to extend his trip to South America, but changed his plans and went to California by way of the Isthmus of Panama, landing almost penniless in San Francisco in April, 1868. Here he saw for the first time the giant crests of the Sierra Nevada Mountains, where he was destined to spend many years of his life. On foot he followed the Diablo foothills along the San José Valley, over the Diablo Mountains to the valley of San Joaquin, and finally to the big trees and the Yosemite.

The following years were devoted to a tireless study of the Yosemite Valley and the surrounding country, tramping over the mountains and tracing the course of glaciers. The minute knowledge which he obtained in this careful study enabled him to demonstrate the theory of glacial formation of the Yosemite region, a formation which eminent scientists had held to be due to a great cataclysm of nature which had split the valley and dropped its bed 3000 feet. These men laughed at Muir's theory, but he lived to see every scientist in the world declare that he was right and they were wrong. His love for the valley, which he was the first to describe, won him the name of "The Father of the Yosemite." In 1889 he interested Robert Underwood Johnson, then associate editor of the *Century Magazine*, in the need for national control of the valley, and to their joint efforts was largely due the success of the movement to make the Yosemite a national reserve.

In order that he might increase his knowledge of the deserts and mountain ranges beyond the Sierras, Muir in 1876 joined the United States Coast and Geodetic Survey, and for three years he worked with the survey in Nevada and Utah. His study of glaciers took him finally to Alaska, where he explored the region north of Fort Wrangel and discovered Glacier Bay and the great Muir glacier. In 1881, as a member of the Corwin expedition he joined in the search for DeLong and the lost *Jeannette*, and was thus enabled to continue his investigations of glaciers along the coast of Siberia and Bering Sea. He studied most of the ice rivers of North America and then went abroad in 1893 to compare the conditions with those in Norway and Switzerland. In 1903–04 he traveled nearly around the world to study the forests of Russia, Siberia, India, the Philippines, Australia, and New Zealand, and during this journey he traveled far up the Amazon. He then sailed for Cape Town and went inland 1300 miles to the Victoria Falls and the Zambezi. After this he went to Australia because he had heard that the eucalyptus trees of that country were the largest in the world. He came to the conclusion, however, that they were not as large as the big trees in California. Mr. Muir wrote much on subjects connected with natural history and geology. His published writings include: *The Mountains of California* (1894); *Our National Parks* (1901); *My First Summer in the Sierra* (1911); *The Yosemite* (1912); and the *Story of My Boyhood and Youth* (1913). He also contributed about one hundred and fifty articles to magazines, newspapers, etc., on the natural history of the Pacific Coast, Alaska, etc., and edited *Picturesque California.* He was a member of the American Academy of Arts and Letters and of several learned societies. From Harvard he received the degree of A.M., from the University of Wisconsin and the University of California, LL.D., and from Yale University, Litt.D.

MÜLLER, KARL VON. See WAR OF THE NATIONS.

MUMFORD, JAMES GREGORY. An American physician and surgeon, died at Clifton Springs, N. Y., Oct. 19, 1914. He was born in Rochester, N. Y., Dec. 3, 1863, and in 1885 graduated at Harvard University. For 12 years thereafter he practiced his profession in Boston, serving on the surgical staff of the Carney and the Massachusetts General Hospital. He was made assistant in surgery in 1895, and in 1902 instructor in surgery in the Medical Department of Harvard University. He was physician-in-chief of the Clifton Springs Sanatorium and Hospital in 1912–14. Dr. Mumford served as surgeon to the Naval Brigade, Massachusetts Volunteer Militia (1892–93), and later was appointed first lieutenant in the medical reserve corps, United States army. He was a Fellow of the American Medical Association and of the American College of Surgeons, and a member of many surgical and medical societies in the United States and abroad. He published: *Surgical Memoirs* (1908); *Practice of Surgery* (1910); *One Hundred Surgical Problems* (1911); and *A Doctor's Table Talk* (1912), besides many contributions to medical journals. He also edited Harrington's *History of the Harvard Medical School.*

MUN, ADRIEN ALBERT MARIE, COUNT DE. A French scholar and public official, died Oct. 6, 1914. He was born in 1841 and received a military education at the Academy of Saint Cyr. From 1862 to 1867 he served in Algiers as a lieutenant. He took a part also in the Franco-Prussian War, receiving the decoration of the Legion of Honor for gallant conduct at Metz. In 1872 he became a captain of dragoons and in 1875 resigned from the army. He took an active part in political life and was at one time Minister of Foreign Affairs. He represented one of the districts of Finistere in the Chamber of Deputies. In his later life he became well-known as a journalist and writer. His published writings include several works on patriotic and social themes. He was a member of the French Academy. Count de Mun was a prominent Roman Catholic and was for many years the mouthpiece of the Catholics in the Chamber of Deputies. He contributed to the *Echo de Paris* after the outbreak of the European War of 1914 a remarkable series of articles which were a special feature of French political life in that period. In these articles he urged the loyal support of the government by French Catholics.

MUNICIPAL BUILDINGS. See ARCHITECTURE.

MUNICIPAL GOVERNMENT. Outstanding features for the year 1914 were a greatly enlarged choice between various forms of municipal government in New York State, permissive legislation and the adoption of a commission-plan charter in Buffalo, N. Y., the adoption of home-rule (locally framed) federal-plan charters by St. Louis, Mo., and Columbus, Ohio, a relatively slow spread of the commission plan throughout the country, and the rapid extension of the city-manager plan. Before taking up these four matters in some detail a few points in the annual review of Clinton Rogers Woodruff, Secretary of the National Municipal League, before the meeting of the League at Baltimore in November, may be noted. The bicameral council now exists in only nine of the 50 largest cities—Philadelphia, Baltimore, Kansas City, Providence, Louisville, Atlanta, Worcester, Richmond (Va.), and Cambridge. It seems safe "to predict," Mr. Woodruff said, "that five years hence not one of the larger cities will be risking its business and its future to the evils of a form which affords such abundant opportunities for inefficiency, and waste, and mismanagement." A significant advance in municipal finance has been contributed by New York City by adopting what will soon become a pay-as-you-go plan of meeting the cost of public improvements. Such bonds as are authorized for these improvements will run for only 1 to 15 years, and will be met from the tax levy as they fall due. Improvements already authorized but not financed on the adoption of the plan were to be paid for wholly by bonds. Subsequent improvements will be paid for, three-fourths by bonds and one-fourth out of the tax levy, in the first year, then changing to cash payment by one-fourth per year until finally no bonds are issued. Another significant movement noted by Mr. Woodruff is the increase in the number of cities which have social or public welfare departments. These now include Kansas City (one of the earliest), Chicago, Denver, Duluth, Grand Rapids, Los Angeles, Cleveland, and St. Joseph.

CHARTER CHANGES IN NEW YORK STATE. Under "The Optional City Government Law" of New York (Chapter 444, approved April 16, 1914, and in effect July 15, 1915), second and third class cities choose any one of six plans or varieties of government and third class cities may place themselves under the existing law governing second class cities, the latter except for a salary modification. The six plans fall under three main types, as regards the distribution of legislative, executive, and administrative functions, as follows: the commission plan, the commission-manager plan, and the federal or separate legislative and executive plan. Variations in the commission plan are a choice between a commission with administrative duties divided among the members and a commission with collective administrative supervision. Variations in the federal plan are in the number of councilmen and in whether they shall be selected at large or by wards. In general, the small council principle is followed and with the single exception noted, elections are at large. A city of the second or third class may vote on the adoption of any of the first six plans if voters to the number of 10 per cent of the votes cast at the last general election petition for an opportunity to vote on a single specified plan. In cities of more than 20,000 population, 2000 signers are sufficient to call an election. A majority of all the votes cast for or against a plan decides. Notable provisions common to any of the plans will first be mentioned. The terms of mayor and councilmen are for four years. The act provides that "all appointments, promotions, removals, and changes in status in the civil service of the city shall be made in accordance with the provisions of the civil service law." The council in commission or in commission-manager cities and the mayor in other cities appoints a civil service commission of three members, for terms of six years. A commissioner may be removed by the unanimous vote of the council, but only on written charges and after a hearing. The board of education and educational funds are not affected by the adoption of any of the plans.

Taking up now the various plans. A and B vest all legislative, executive, and administrative powers in a council composed of a mayor and four councilmen, except that places of less than 25,000 population may choose between five and three members. The mayor has about the same powers as the other members of the council, but in addition it is his duty to inform himself as to the conduct of each city department, and report the results to the council from time to time, with recommendations. Under A, the yearly salaries of the four councilmen range from $400 for places of less than 8000, to $4500 for places of 100,000 or more, and the mayor receives one-fourth more salary than the councilmen. Under B, the salaries range $300 a year in places of less than 10,000, to $1200 in places of 100,000 or more, and no difference in the salary of the mayor is specified. Under C, the council has legislative powers, only, and all executive and administrative powers, including the appointment and removal of officers and employees, are vested in a manager, appointed by the council, holding office during its pleasure and receiving such compensation as the council may fix. In second class cities under C, the council shall consist of a mayor and six councilmen, and in third class cities, of four councilmen and a mayor. The mayor is substantially on a par with the other members of the council. The salaries paid the mayor and the other councilmen under C are the same as have been stated for B. Plans D, E, and F provide for the complete separation of the legislative and executive powers of the city. Under D, the council consists of five or three members, who elect one of their number as president. The mayor is the chief executive officer and may make all appointments. No council ordinance or resolution becomes effective without his signature, unless passed over his veto by all the members of a council of three, and four of the five members of a council of five. The salaries of councilmen under D are one-half of those under A, and of the mayor three times that of the councilmen. Plan E is the same as D, except that there are nine councilmen, and plan F is also the same as D, except that the councilmen are elected by wards instead of at large, and that there is one councilman for each ward. By an apparent oversight the number of votes to override the veto of the mayor is omitted from plans E and F. Plan G simply authorizes cities of the third class to adopt all the provisions of the existing second-class cities law (Chapter 53, Consolidated Laws of New York), except that where the second class cities act specifies cities, third class cities adopting it shall pay salaries two-thirds of those stipulated for cities of less than 75,000.

At the November elections, C, or the commission-manager plan, was rejected by Mt. Vernon, Cohoes, and Lockport, and adopted by Niagara Falls. Auburn rejected B, or the commission plan with the whole commission responsible for administrative acts. At the same election Buffalo adopted a special charter authorized by the Legislature (outlined just below). Earlier in the year Olean, N. Y., rejected a special legislative charter on the commission-manager plan.

The Buffalo Charter. After a struggle of many years and several legislative defeats, advocates of commission government for Buffalo, N. Y., secured the passage of a commission-plan charter by the legislature of 1914. The mayor of Buffalo vetoed the charter, under a constitutional provision which submits all legislation affecting only one city in New York State to the mayor of that city for approval or disapproval. The Legislature overrode the veto. At the November election the charter was adopted by a popular vote of 36,362 to 20,891. The new charter was to go into effect Jan. 1, 1916. It provides for a council or commission, elected at large on a nonpartisan ballot, consisting of a mayor elected as such at $8000 a year, and four other commissioners at $7000 a year. The term of office is four years. The mayor heads the department of public safety. The council decides which of the other members shall be head of the departments of (2) finance and accounts, (3) public affairs, (4) public works, (5) parks and buildings. The duties falling by statute upon the board of health will be performed by the commission unless and until it delegates them to either the mayor or a commissioner of health. Provision is made for the referendum on ordinances passed by the council but not for the initiative nor for the recall.

THE ST. LOUIS CHARTER. St. Louis, Mo., adopted a federal-plan charter framed, under the Missouri home rule law, by a board of freeholders. The legislative body consists of 28 aldermen, one from each ward of the city, but elected at large until constitutional amendments permit election by wards. The mayor is the chief executive officer, with a salary of $10,000 a year. The mayor appoints the assessor, register, city counselor, city marshal, city court judges, and clerks, president of the board of public service, and directors of public utilities, streets and sewers, public welfare, and public safety, the five last named constituting the board of public service. Each member of this board is paid $8000 a year. The president and the directors of public utilities and of streets and sewers must be "engineers of technical training, of at least 10 years' experience, and qualified to design as well as direct engineering work." The president of the board of public service, and each of the four directors, appoints all heads of divisions in his department, and the heads, in turn, appoint all officers and employees therein, and also manages his division. The mayor, comptroller, and president of the board of aldermen comprise a board of estimate and apportionment, and there is a complaint board of three members to hear and investigate all complaints against officials and employees of the city, and against public utility corporations. The civil service is administered by an efficiency board of three members, appointed by the mayor. The unclassified service (employees not subject to examination), includes all officers elected by the people, all heads of departments, offices, and divisions, all members of boards appointed by the mayor to serve without pay, and various secretaries and stenographers, besides various officers requiring exceptional scientific or educational attainments. The officers last named need not be residents of the city. The existing municipal assembly was to be continued in office until April, 1915, and various existing administrative officers until their terms expired. The charter provides for the initiative, and the referendum, and also for the recall of all elective officers. The mayor may remove non-elective officers.

THE COLUMBUS CHARTER. Another federal-plan home-rule charter which may be outlined, is the one framed by a charter commission of 12 members. The commission was elected by popular vote on May 6, 1913, and reported on March 3, 1914. The charter was adopted by popular vote on May 5, 1914, but except for minor provisions was not to go into effect until Jan. 1, 1916. In contrast to the St. Louis charter, the Columbus charter provided for only seven councilmen, elected at large. There are also elected a mayor, city attorney, and auditor. All elective officers serve for four years, but the terms are so arranged that only five offices will be filled at any one election. To reduce still further the total number of candidates there is a primary election of candidates for councilmen. Voters express first, second, and third choice for mayor, attorney, and auditor. Provision is made for the initiative, referendum, recall, civil service, a public defender (for the indigent), a public welfare division, and a board of purchase. Councilmen are paid $1000 a year, subject to a deduction of two per cent for non-attendance at any regular meeting, and forfeiture of office for being absent at eight consecutive regular meetings without excuse from the council. The mayor is paid $5000 a year. His vetoes may be overridden by the same number of votes as were required to pass the original measure. He appoints the directors of public service and public safety outright. With the concurrence of the council he appoints sinking fund trustees, civil service commissioners, four members of the board of health, and members of any advisory commissions created by the council. The fifth member of the board of health is the superintendent of public welfare, who heads a corresponding division in the department of public safety. The mayor is president of the board of health, but has no vote in that body.

OTHER CHARTER ADVANCES. The country over, charter making and amending was perhaps not so active in 1914 as in the few preceding years, although the sum total would have been held as remarkable a dozen years earlier. There was considerable activity in Ohio, where several cities adopted the new charters, some including the city-manager plan, while Toledo adopted a federal-plan charter. A California constitutional amendment authorized cities of that State of from 2500 to 3500 population to frame their own charters, a privilege already enjoyed by larger cities in that State. Most of the charter changes are to the commission plan, under which all legislative and administrative powers are vested in a single small commission, or council, elected at large. Many of the new charters or charter amendments departed radically from the simon-pure commission plan by vesting all executive functions in a city manager appointed by the council. A few cities reverted to the old federal plan, with a mayor as chief executive, who appoints all department heads and approves or vetoes all council regulations or ordinances. It appeared that in a majority of cases the city-manager plan was combined with the commission plan. Whichever of these three types is adopted almost invariably the council is small, generally five members, sometimes three in the smallest places, and now and then seven or nine. The out-and-out commission plan generally carries with it the initiative, the referendum, and the recall.

THE COMMISSION PLAN. Exactness in stating the number of cities which have adopted the commission plan in a given year or all told is impossible. The best records obtainable show that 41 cities adopted the plan in 1914, making a total of 426. (See accompanying table for 1914 accessions, and 1913 YEAR BOOK for list of commission-plan cities up to the close of 1913.) The most notable addition to this list was Buffalo (see paragraph above), which, with its population of 423,715 in 1910, is much the largest which has yet adopted the plan. Others in excess of 100,000 population (1910), are as follows: New Orleans, 339,075; Jersey City, 267,779; Denver, 231,381; St. Paul, 214,744; Portland, 207,714; Oakland, 150,174; and Birmingham, Memphis, Omaha, Dayton, Nashville, Lowell, and Spokane, in the order named. Aside from Buffalo and San Antonio, the cities which adopted the plan in 1914, were all below 32,000 (see accompanying table). The 1914 accessions were also fewer in number than those of any of the three previous years. The growth of the commission plan by years, as accurately as it can be given, was as follows:

1901	1	1911	96
1905	1	1912	67
1907	7	1913	112
1908	5	1914	41
1909	23	Not given	7
1910	66		
		Total	426

In Canada, the commission plan does not seem to be in favor as yet. So far as can be stated here it was in use at St. Johns, N. B., and Lethbridge, Alberta, only.

TENTATIVE LIST OF CITIES WHICH HAD ADOPTED THE CITY-MANAGER PLAN UP TO DEC. 31, 1914

(Based in part upon records of the National Short Ballot Organization)

	Population	*Date*
Niagara Falls, N. Y.	30,445	1914
Titusville, Pa.	8,533	1913
Charlottesville, Va.	6,765	1913
Staunton, Va.	10,604	1908
Hickory, N. C.	3,716	1913
Morganton, N. C.	4,712	1913
Sumter, S. C.	8,109	1912
Lakeland, Fla.	3,719	'13 or '14
Ashtabula, O.	18,266	1914
Dayton, O.	116,577	1913
Sandusky, O.	19,989	1914
Springfield, O.	46,921	1913
Big Rapids, Mich.	4,519	'13 or '14
Cadillac, Mich.	8,375	1913
Grand Haven, Mich.	5,856	1914
Jackson, Mich.	31,433	'13 or '14
Manistee, Mich.	12,381	1913
River Forest, Ill.	2,456	1913
Clarinda, Iowa	3,832	1914
Iowa Falls, Iowa	2,797	1914
Morris, Minn.	1,685	1913
Abilene, Kan.	4,118	1913
Collinsville, Okla.	1,324	1914
Amarillo, Tex.	9,957	1913
Denton, Tex.	4,732	1914
Taylor, Tex.	5,314	1914
Montrose, Colo.	3,254	1914

	Population	Date
Las Cruces, N. M.	3,856	'13 or '14
Phoenix, Ariz.	11,134	1913
Tucson, Ariz.	13,193	1914
La Grande, Ore	4,843	1913
Alhambra, Cal.	5,021	1914
Bakersfield, Cal.	12,727	1914
Inglewood, Cal.	1,536	1914

LIST OF CITIES REPORTED AS HAVING ADOPTED THE COMMISSION PLAN IN 1914

(From records of the National Short Ballot Organization and the National Municipal League)

Name of city	*Population U. S. Census of 1910*
Buffalo, N. Y.	423,715
Niagara Falls, N. Y.	30,445
Asbury Park, N. J.	10,150
Belleville, N. J.	9,891
Irvington, N. J.	11,877
Orange, N. J.	29,630
Dubois, Pa.	12,623
Ashtabula, O.	18,266
Sandusky, O.	19,989
Bloomington, Ill.	25,768
Effingham, Ill.	3,898
Flora, Ill.	2,704
Highland Park, Ill.	4,209
Adrian, Mich.	10,763
Big Rapids, Mich.	4,519
Eaton Rapids, Mich.	2,094
Jackson, Mich.	31,433
Manistee, Mich.	12,381
Antigo, Wis.	7,196
Fond-du-Lac, Wis.	18,797
Kirksville, Mo.	6,347
Monette, Mo.	4,177
West Plains, Mo.	2,914
Fort Scott, Kan.	10,463
McPherson, Kan.	3,546
Osawatomie, Kan.	4,046
La Follette, Tenn.	2,816
Murfreesboro, Tenn.	4,679
Florence, Ala.	6,689
Greenwood, Miss.	5,836
Lafayette, La.	6,392
Weatherford, Okla.	2,118
Coleman, Tex.	3,046
Denton, Tex.	4,732
Honey Grove, Tex.	2,300
Luling, Tex.	1,404
San Antonio, Tex.	96,614
Montrose, Colo.	3,254
Florence, Ore.	311
Alhambra, Cal.	5,021
Bakersfield, Cal.	12,727

The City-Manager Plan. When the commission plan was sweeping over the country, one of its most winning claims was that it places all the governmental powers of the city in a single small body, just as the affairs of a private corporation are lodged in a board of directors. Although the parallel was largely true it deviated in this vital respect: the city commissioners exercise both policy-determining or legislative, and policy-executing or executive, functions, and under the commission plan there are a number of coördinate administrative heads, while successful private corporations have a separate policy-determining and policy-executing function, and a single but powerful executive head, subject only to the board of directors. Strangely enough, the way to completing the parallel between the municipal and private corporation was not led by a city which was primarily seeking that end but by one which wished to adopt the commission plan but was stopped by a constitutional bar, and so created the office of general manager. This office was assumed at Staunton, Va., by Charles E. Ashburner, a civil engineer, on April 2, 1908, thus beginning a new era in city government. In 1912, the Legislature of South Carolina authorized Sumter to adopt either the commission plan or what is now known as the commission-manager plan. The latter was chosen the same year by a heavy majority, and after public advertisement Sumter chose M. M. Worthington, a civil engineer, as manager. He took office in January, 1913. Unless the action in 1912 of Norwood, Mass., in combining in one the offices of town engineer, superintendent of public works, and director of the water and lighting systems be called the adoption of the manager plan, then no more cities adopted it until 1913. In that year and in 1914, it appears that the plan was adopted by 34 cities, divided about equally between the two years, making a total of 34 cities to the close of 1914. The exact figures and dates are somewhat uncertain as has been explained for commission-plan cities under that heading, but the best figures available are given in the accompanying table. It will be seen that as with the commission plan, so here, most of the cities adopting the manager plan, and all of the early ones, were small, the largest being Dayton, Ohio (116,577), Springfield, Ohio (46,921), Jackson, Mich., and Niagara Falls, N. Y. (each about 30,000). On June 30, 1914, Seattle voted down the city-manager plan by a large majority. In December, 1914, eight city managers gathered at Springfield, Ohio, and with six others who had expressed their interest by letter or telegram formed the city managers association. In the course of a paper presented at that meeting by Henry M. Waite, city manager of Dayton, Mr. Waite said that although in many cities the most important problems to be solved are of an engineering character the city manager need not be an engineer. He must be an executive; must know how to handle men; must be fair and just, firm and polite; and must have the courage of his convictions. Mr. Waite was chosen president, and Ossian E. Carr, Cadillac, Mich., was made secretary of the new association. Most of the city-manager cities have the commission form of government as well.

Bibliography. James, *Applied City Government: The Principles and Practice of City Charter Making* (New York); Matthews, *Municipal Charters* (Boston); Dawson, *Municipal Life and Government in Germany* (New York); Cooley's *Handbook on the Law of Municipal Corporations* (St. Paul); *Taxation and Revenue Systems of State and Local Governments*, and *Financial Statistics of Cities of Over 30,000: 1913* (Bureau of the Census, Washington, D. C.).

See also City Planning; Garbage and Refuse Disposal; Municipal Ownership; Roads and Pavements; Sewerage; Sewage Purification; Street Cleaning and Snow Removal; Water Purification; and Water-Works.

MUNICIPAL LEAGUE, National. The twentieth annual meeting of the National Municipal League was held in Baltimore, Nov. 18, 19, and 20, 1914. The city manager form of government and efficiency in municipal affairs attracted wide attention, as did likewise the social phases of the problem.

The principal address on the city-manager form of government was made by City Manager Henry M. Waite, of Dayton, Ohio, and the leading address on administrative officials in municipal government was made by President Lowell of Harvard University. Reports were presented from the Committees on Civic Education, Political Methods, Municipal Courts, The Liquor Problem, Franchises, Municipal Reference Libraries and Archives. Among the social questions considered were: "The Relation of the City to its Food Supply," Prof. Clyde L. Ling of the University of Pennsylvania, chairman of the League's special committee on the subject; "The Children of Our Cities," Mrs. Florence Kelley; "Women's Work for the City," Mrs. Charles A. Beard; and an address by Jane Addams of Chicago, on "Social Phases of City Life." Miss Frances A. Kellor of New York outlined a municipal programme for dealing with unemployment.

The Committee on Municipal Programme through its chairman, the Hon. William Dudley Foulke, presented a partial report in the form of sections of a model charter dealing with the city manager, council, civil service, and efficiency branches, and constitutional provision. The committee unanimously reported in favor of the city-manager form of government and of extending the merit system to the highest possible offices. This committee consists of William Dudley Foulke, chairman, Richmond, Ind.; M. N. Baker, Montclair, N. J.; Richard S. Childs, New York City; Mayo Fesler, Cleveland, Ohio; Prof. John A. Fairlie, University of Illinois; Dr. Herman G. James, University of Texas; Dr. A. Lawrence Lowell, Harvard University; Prof. William E. Munro, Harvard University; Robert Treat Paine, Boston, Mass.; Dr. Delos F. Wilcox, New York City; and Clinton Rogers Woodruff, Philadelphia, Pa.

President Foulke's address dealt with evolution in city charter making, and Secretary Clinton Rogers Woodruff's address dealt with the present phases of the municipal situation with special reference to the effect of the European War on American city thought and action. In connection with the meet, there was a conference of civic secretaries presided over by Addison L. Winship of the Boston City Club, which formulated some interesting suggestions for the work of voluntary civic bodies.

The present officers were reëlected, and President Frank J. Goodnow of Johns Hopkins University added to the list of vice-presidents. Four new volumes in the National Municipal League are to be published during 1915: *The Lower Cost of Living in Cities*, by Dr. Clyde L. King; *Women's Work for Municipalities*, by Mary Ritter Beard; *Satellite Cities*, by Graham Romeyn Taylor; *The City Manager*, by H. A. Toulmin, Jr. The officers of the league are: President, William Dudley Foulke, Richmond, Ind.; treasurer, George Burnham, Jr., Philadelphia, Pa.; secretary, Clinton Rogers Woodruff, Philadelphia, Pa.; chairman of the executive committee, M. N. Baker, Montclair, N. J.

MUNICIPAL OWNERSHIP. Progress towards municipal ownership of water-works at San Francisco was continued by the taking of testimony in condemnation proceedings to acquire the works of the Spring Valley Water Company. About the middle of the year it was announced as probable that a purchase price of $34,500,000 would be fixed by mutual agreement. Early in the year Denver, Colo., voted 12,640 to 6953 in favor of $3,000,000 bonds as a contribution towards building a 6-mile tunnel through the Continental Divide for the Denver and Salt Lake Railroad (the "Moffatt Road"), the tunnel to accommodate a water-supply conduit from the headwaters of the Grand River. The Colorado Supreme Court afterwards declared the proposed bond issue illegal because it was an evasion of a constitutional prohibition of using public funds to aid a private corporation. Other water-supply plans were under consideration by the Denver Public Utility Commission, established by a charter amendment in 1910 to acquire and operate water-works for Denver. Des Moines, Iowa, voted three times in 1914 on acquiring the property of the Des Moines Water Works Company at an appraised valuation. There was a good numerical majority in favor of the purchase each time, but not so heavy a majority as the law required at the first and second elections, and technical points were raised as to the majority at the third election. All the largest and the major part of all the cities of the United States own their water-works.

The new municipal street railway system for San Francisco, for which $2,020,000 bonds were voted in December, 1909, and $3,500,000 in August, 1913, was expected to be in use in its entirety at the close of the year. An east and west line extends from the Market Street ferry to the ocean, and north and south lines from the Mission and Protero districts to the Exposition Grounds, and other northern points. Construction was begun in 1911, and a part of the system was completed in June, 1913. Detroit voted bonds for municipal street railways in April, 1913, following which the mayor appointed a board of street railway commissioners. A valuation of the private street railway system was being made by experts for the commissioners in 1914, preparatory to an expected purchase. In Canada a few of the smaller cities owned street railways; Toronto was preparing to take over the system there; and a "hydro-radial" electric railway scheme is projected jointly by various municipalities and the Hydro-Electric Power Commission of Ontario. On Oct. 19, 1914, 11 of the 13 municipalities included approved the project by popular vote. Two lines were proposed; one from Toronto to Newmarket, 25 miles, and another from Toronto to Port Perry, 35 miles in length. Construction, it was said, must await a provincial appropriation.

A new municipal electric light plant at Cleveland, Ohio, was opened during the year. It had three new 7500-kilowatt steam-turbine-driven generators, which with an old 2500-kilowatt unit bring the total capacity up to 25,000 kilowatts. The maximum rate for current, 3 cents per kilowatt-hour, attracted much attention because of its lowness. The discussion brought out the fact that the same maximum rate has been charged since October, 1911, by the municipal plant of Winnipeg, Manitoba. See *Engineering News*, July 30, 1914, and Sept. 24, 1911, for discussion of rates, also a paper describing the plant presented before the December meeting of the American Society of Mechanical Engineers by F. W. Ballard, commissioner of light and heat, Cleveland, Ohio, and engineer of construction.

MURRAY, SIR JOHN. A British oceanographer, died March 16, 1914. He was born at Coburg, Ont., in 1841, and when he was 17 years of age went to Scotland to complete his education at the University of Edinburgh, where he devoted himself especially to literature. In 1871-72 he took a large part in the organization and equipment of the *Challenger* expedition, which from 1872 to 1876 penetrated into nearly all the seas of the globe. Mr. Murray accompanied the expedition and devoted himself to the study of deep sea deposits, and he had charge of all the collections which were sent home during the expedition or brought back with the ship. The examination and working-up of these collections and the other results formed a stupendous task, and lasted much longer than the expedition itself. In 1880 and in 1882, he took part in the exploration of the Faroe Channel, and between the years of 1883 and 1894 he continuously explored the coasts and lochs of the east and west coasts of Scotland in his steam yacht the *Medusa;* he also established marine laboratories on the shores of the Forth at Granton, and on the Clyde at Milport. For many years he was a scientific member of the Scottish Fishery Board. He was also a strong advocate of the renewal of Antarctic exploration, and it was partly through his efforts that the National Antarctic Expedition was fitted out. To the end of his life he was constantly traveling in various parts of the world, taking an active part in promoting the sciences to which he was devoted, and in encouraging and assisting young men to devote themselves to scientific works.

MUSEUM OF ART. See ARCHITECTURE; and PAINTING AND SCULPTURE.

MUSIC. Following an established custom, a brief summary of the principal events of the last five years precedes the account of the musical happenings of 1914. The keen rivalry between the Metropolitan and Manhattan Opera Houses brought about an operatic war, which resulted in the payment of exorbitant prices to the principal artists, so that both institutions closed their season with a considerable deficit. Boston opened its own opera house with a company of the first rank. The New York Philharmonic Society was completely reorganized under Gustav Mahler (1909). The enormous expenditures incurred through the production of many new operas caused Mr. Hammerstein to withdraw from the operatic field, and to sell all his interests to his rival. The greater part of the Manhattan company was formed into a new organization, the Chicago Opera Company, under Andreas Dippel. In order to prevent the recurrence of conditions leading to financial ruin, the three great opera companies of New York, Boston, and Chicago apportioned the territory among themselves, and adopted a plan for the mutual exchange of their principal artists (1910). This agreement being strictly observed resulted not only in the elimination of unnecessary expense, but also created a spirit of unity which effectively broke up the Opera Trust controlled by Ricordi of Milan. Taking advantage of the rivalry between the Metropolitan and Manhattan companies the Trust, which monopolized almost the entire operatic production of Italy, had become more and more exorbitant in its demand of royalties. At last matters had come to such a point that the policy of American managers was practically dictated by Milan. The failure of Puccini's *Girl of the Golden West* became the signal for revolt. Chicago eliminated all works by Puccini; New York and Boston greatly curtailed the number of both works and performances (1911). This concerted action resulted in an adjustment of the differences between the American managers and Ricordi. Operas by American composers were produced, and a movement toward the production of opera in the vernacular was rapidly gaining ground. In Europe the year was notable for the discovery of a number of manuscript scores of Beethoven, Bach, Liszt, and Schumann (1912). The movement in favor of opera in the vernacular took definite shape in the establishment of the City Club, through whose efforts the Century Opera Company was founded in New York. In the concert world a reaction manifested itself against excessive production of novelties of little value usurping the place of works of acknowledged worth. Throughout the world the year was marked by elaborate celebrations in honor of the centennials of the birth of Wagner and Verdi. The application of the heirs of Wagner for an extension of the copyright of *Parsifal* was refused by the Reichstag (1913).

GENERAL NEWS. For the effects of the great European War upon the musical conditions of Europe, see the subdivisions *Germany, England, France.* As a result of this unsettled state of things a greater number of world-famous artists visited the United States than ever before in one season, and, despite all complaints about hard times, found liberal support. Nor were the activities of native artists and organizations curtailed to any appreciable degree. Mr. Hammerstein was definitely restrained by the courts from violating the agreement into which he had entered with the Metropolitan Opera Company in 1910. On February 13 the American Society of Composers, Authors, and Publishers was incorporated in New York. Its object is the same as that of the French Société des Auteurs, Compositeurs, et Editeurs. (Consult NEW INTERNATIONAL YEAR BOOK, 1911, MUSIC.) Fixed fees are collected on all performances of works by members, and the amount collected is equally divided between composer and publisher. The society is administered by a board of directors consisting of six authors, six composers, and six publishers. For the purpose of enabling talented young artists to secure public hearing, the Music League of America was established in the spring. A committee of artists of acknowledged reputation passes upon the qualifications of aspirants, and the league secures engagements for the successful candidates. In order to stimulate the ambition of native composers, the city of Los Angeles offered a prize of $10,000 for the best opera. At the same time a guarantee fund of $50,000 was raised to ensure its adequate production during the musical festival to be conducted in connection with the Panama Exposition of 1915. A little later the committee announced its intention of making this prize a quadrennial one on condition that the American Federation of Musical Clubs would hold every fourth of its annual conventions at Los Angeles. The prize this year was won by Horatio Parker with *Fairyland.* At Chicago a "National Pianists' Contest" was held for a prize of $200 for the best performance of MacDowell's *Concerto in A minor* by a young pianist who had received his or her entire musical training in the United States. The winner was Pasquale Tallarico of Wilton, N. H.

THE UNITED STATES

ARTISTS: INSTRUMENTALISTS. The year presented an unusual number of great pianists. Owing to a nervous breakdown, Paderewski was obliged to cancel a number of engagements on the Pacific Coast, but recovered in time to finish his spring tour, scoring his customary phenomenal success. However, a renewed attempt to win laurels as a composer failed when he played his own piano concerto with the Boston Symphony Orchestra. Katherine Goodson played the same work, but both public and critics declined to accept it. Harold Bauer again gave a superb rendering of Brahms's colossal piano concerto, of which almost all pianists seem to be afraid, for outside of Bauer only Ansorge and Joseffy have played it in the United States. After several years of absence, Mme. Olga Samaroff reappeared in recital and with orchestra, and proved herself a matured artist of the first rank. Ethel Leginska, who made a decided impression the year before, challenged comparison with the greatest masters of the keyboard by her magnificent interpretation of an all Chopin programme which included all the études. Leonard Borwick, practically a newcomer, proved to be the sensation of the season. Three years before he had played two or three recitals at the end of a busy season, and had passed almost unnoticed. Now he comes unheralded, known only to a very few, and reveals himself as one of the giants of the piano. Jan Sickesz, a Dutch pianist whose recitals many years ago held out much promise, returned to show that he has joined the ranks of the masters. Nor must David Sapirstein be forgotten while speaking of the younger artists who have amply fulfilled early promises. Michael Zadora was heard again after an absence of several years, but proved erratic and unreliable. Sometimes his playing was truly great, at other times it savored of charlatanism. Entirely new to the American public were Eleanor Spencer, a native of the United States, and Karl Friedberg, a German. Very favorable reports of her European successes had preceded Miss Spencer, which the emphatic success of her American début justified. She is a splendidly equipped artist in all respects. Mr. Friedberg was accepted as the equal of the acknowledged favorites. Among the most illustrious pianists whose art is familiar to all lovers of music, were: Bachaus, Gabrilowitsch, Godowsky, Hofmann, Ganz; Fanny Bloomfield-Zeisler, Yolando Merö, Teresa Carreño, Tina Lerner, and Germaine Schnitzer.

At the début of the Hungarian violinist, Carl Flesch, with the New York Philharmonic Society, enthusiasm ran so high that the strict rule forbidding encores had to be suspended. His large tone, flawless technic, and impeccable intonation disarmed all criticism, and his fiery temperament fairly carried away the listeners. Arrigo Serato, who for several years past has been regarded as the greatest violinist of Italy, proved that he need not fear comparison with the greatest living masters of any nationality. Manuel Quiroga, a Spaniard, showed himself possessed of splendid technical equipment and genuine temperament, but created the impression that he is a brilliant rather than a profound artist. Alexander Bloch, an American, introduced himself as a violinist of sterling merit. Another American, Frank Gittelson, though only a youth of 18, revealed himself as nothing less than a genius of the violin. Even now he must be judged only by the highest standards. A most successful tour of the French violinist Jacques Thibaud was unfortunately cut short by the sudden death of his father. The reappearance of Fritz Kreisler after his participation in the war was made the occasion of tumultuous demonstrations, the spontaneous expression of sincerest rejoicing over the preservation of this rare artist. His playing showed not the slightest effect of the terrible hardships he had undergone. Other famous violinists that were heard were: Elman, Kubelik, Macmillen, Spalding, Ysaye, Zimbalist, Kathleen Parlow, and Maud Powell.

The cello had a larger number of representatives than it has had for many years past. Since his last appearance here 10 years ago the Spanish cellist Pablo Casals has come to be regarded by many as the greatest master of his instrument in Europe, and, naturally, expectation was keen. The general verdict was that his superior had not been heard here. Other artists heard were: Gérardy, Schulz, Malkin, Van Vliet, and Beatrice Harrison.

VOCALISTS. Not a single vocalist of the first rank made an American début during the past year. Yet the appearance of Clara Gabrilowitsch (contralto) was watched with unusual interest; in the first place, because she is the daughter of Mark Twain, and secondly, because she is the wife of one of the world's greatest pianists. As a singer she made no very deep impression, being almost overshadowed by her husband's superb accompaniment at the piano.

After a short interruption of her professional career for the purpose of studying with Mme. Sembrich in Berlin, Mme. Alma Gluck made her reappearance as a song recitalist. No change was noticeable either in the natural beauty of her voice or the mechanical method of tone production. The benefit of her study with that unsurpassed queen of song manifested itself, however, on the interpretative side in a heightened command of all those means that make for artistic expression. The very favorable impression made the previous year by Ottilie Metzger at the two concerts of the Philharmonic Society was entirely confirmed in her recitals. She is particularly great when portraying tragic emotions. Of the famous operatic stars the following were also heard in recital: Slezak, Fremstad, Schumann-Heink, Eames, Alda, Gerville-Réache, Gadski. Melba, Tetrazzini, and Titta Ruffo made triumphal concert tours from coast to coast. Those who devoted themselves entirely to the concert platform and recital included: Culp, Butt, Bispham, Werrenrath, Hamlin, McCormack, and Rogers.

ORCHESTRAS. When about three years ago the Boston Symphony Orchestra announced a programme dispensing with the attraction of a solo artist, such radical departure from custom caused general comment and speculation. But the overwhelming success of the experiment justified the faith of the conductor in the intelligence and seriousness of the music-loving public. The next organization to put its audience to a similar test was the New York Philharmonic Society with a result equally gratifying. During the past year almost all the great symphony orchestras offered one or more such programmes without a soloist. The New York Symphony Society (Walter Damrosch) gave a Beethoven Festival lasting six days, when the master's most important works, including, of course, all the nine symphonies, were performed. The soloists were Julia Culp, Kathleen Parlow, Josef Hofmann, and Oscar Seagle. A generous offer from Mr. Henry H. Flagler to assume, after May 1, 1914, personal responsibility for the annual deficit, which generally varied between $50,000 and $60,000, places the organization on a sound financial basis, and permits Mr. Damrosch to concentrate his energy upon the attainment of still higher artistic standards. The total number of concerts given approximated 100 (62 in Greater New York). After the conclusion of its regular season the Chicago Symphony Orchestra (Frederick Stock) gave three additional concerts at popular prices with immense success before sold-out houses. At one of its regular concerts the Philadelphia Symphony Orchestra (Leopold Stokowsky) brought out one of its members, Paul Rahmig, as a soloist on the double bass. Probably not one in the audience had ever heard a bass virtuoso. The composition itself, a concertstück by Stein, though rather uninteresting, gave an excellent idea of the possibilities of the instrument, and showed Mr. Rahmig as a consummate artist. The organization also visited New York, playing a very exacting programme (the principal numbers being Brahms's *First Symphony*, and Strauss's *Tod und Verklärung*), and met a most cordial reception from both public and critics. The Cincinnati Symphony Orchestra (Ernst Kunwald) increased the number of its regular subscription concerts from 24 to 32.

Under the auspices of the New York *Evening Sun*, Julius Hopp arranged a "Wage Earner's Carnival," which lasted six days, and for which the Russian Symphony Orchestra under Modest Altschuler was engaged. Ysaye, Fremstad, Ober, Constantino, and Pilzer were the soloists. Each evening was devoted to composers of a certain nationality. In order to provide good music at nominal prices to the masses, the Boston Philharmonic Society, an organization of 60 performers under the direction of Charles Frank, gave a very successful series of concerts on Sunday afternoons. An important factor in the movement for the popularization of good orchestral music was the series of 63 concerts given in New York by Henry T. Fleck, professor of music at Hunter College, with an orchestra of 60 performers. The Board of Education granted for this purpose the sum of $10,000 and the free use of its buildings.

To meet the ever increasing demand for experienced orchestral players, Christian Kriens of New York founded the "Kriens Symphony Club," where young men and women may acquire the necessary routine. The first public concert, given in April, showed that among the 100 young performers constituting this orchestra there was some really excellent material. Many members of the orchestras of the Boston and Chicago Opera Companies who, owing to the cancellation of the operatic seasons, found themselves without employment, flocked to New York, where, under the leadership of Julian Carillo, they formed themselves into the American Symphony Orchestra. Just why that name was chosen did not become apparent at the first concert in December, when the principal number on the programme was a *Symphony in D* by the conductor. From St. Paul came the news of the disbanding of the excellent local Symphony Orchestra, of which Walter Rothwell had been the conductor. Because of the war, the management found it impossible to raise the necessary guarantee fund of $50,000.

Novelties. The Boston Symphony Orchestra (Karl Muck) brought out a new tone poem, *Samson*, by Rubin Goldmark, which contains passages of real beauty and effectiveness. A *First Symphony* by Philip Clapp made little impression, because the themes, though good in themselves, were developed in fragmentary fashion. E. von Reznicek's symphonic poem, *Schlemihl*, suffered from too heavy instrumentation, and was a rather open and superficial imitation of Strauss. Nor was a symphonic poem by Florent Schmitt, *La Tragédie de Salomé*, remarkable. Arnold Schönberg's *Fünf Stücke für Orchester*, which upon its American première in Chicago the year before was received with laughter and hisses, met a similar fate in Boston. More fortunate in its choice of novelties was the Chicago Symphony Orchestra (Frederick Stock). A *Symphony in D* by Eric Delamarter showed considerable inventive and constructive power. Frederick Stock's overture, *Life's Spring-Tide*, fairly carried away the audience with its exuberant spirit and brilliant instrumentation. Florent Schmitt's *Rhapsodie Viennoise* proved to be heavy, cumbersome, and extremely impressionistic—anything but what its title suggested. Erich Korngold's *Sinfonietta* was heard with considerable interest. It is really a full fledged symphony, and in all respects an astonishing work for a 17-year-old composer. In a *Symphonic Suite*, Adolf Weidig presented in genuine romantic style a series of mood pictures of rare beauty, drawn with a master's hand. The New York Philharmonic Society (Josef Stransky) presented a symphonic study by Guy Ropartz, *La Chasse du Prince Arthur*, a work showing solid workmanship without striking originality. The same composer's *Fourth Symphony in C* also lacked the individual note, and contained no message of special importance. Yet it was good, effective music, which derived a special significance from the fact that a distinguished exponent of French hypermodernism worked out clearly defined themes in one of the classical forms. The offerings of the New York Symphony Society (Walter Damrosch) consisted of a *Symphonic Suite* by Victor Kolar, in which the composer had adopted Dvořák's idea of using negro melodies as thematic material; and a symphonic fragment, *Daphnis et Chloe*, by Maurice Ravel, a typical hypermodern work, full of so-called "atmosphere" and entirely devoid of any tangible idea. The Russian Symphony Orchestra (Modest Altschuler) introduced two unknown works by famous Russian masters. The *Piano Concerto in C♯ Minor* by Rimsks-Korsakov (played by Eleonora Spencer) is interesting and contains some fine themes, but is lacking in logical development, and rather rhapsodical in character. The *First Symphony in E minor* by Ippolitov-Ivanov is frankly melodious and of great sensuous charm, quite typical of the composer's style. The contribution of the Cincinnati Symphony Orchestra (Ernst Kunwald) was Erich Korngold's *Ouverture zu einem Schauspiel*, the work of a boy of 14. The themes are somewhat reminiscent of Wagner, their treatment and orchestration of Strauss. The Philadelphia Symphony Orchestra (Leopold Stokowsky) produced a new *Violin Concerto in D minor* by Jean Sibelius (played by Thaddeus Rich), which can hardly be considered as among the best works of that composer. One of the most impressive new works heard during the year was brought out by the Minneapolis Symphony Orchestra (Emil Oberhoffer), a *Suite for Orchestra*, by Ernst von Dohnanyi. It is a work of sustained power and serene beauty.

CHAMBER MUSIC. Four or five years ago the appearance of two famous solo performers in a joint recital of chamber music was a decided novelty and something of an event. To-day such joint recitals belong to the established order of things. The artists thus heard during the past year were Hofmann-Elman, Bauer-Thibaud, Bachaus-Parlow, Leginska-Caslova, David and Clara Mannes. Quite an unusual event, however, was the joint appearance in a Beethoven Trio of the three giants, Ysaye, Gérardy, and Godowsky. Yet the artistic result was a disappointment because of the lack of proper ensemble. At one of their concerts the Flonzaleys introduced to America the *Quartet in D minor* by Arnold Schönberg, which aroused considerable discussion and comment, but none favorable. On one point all critics were agreed: the music never appealed to the emotions. Georges Barrère, whose organization of woodwind instruments, "The Barrère Ensemble," occupies a foremost place in the field of chamber music, appeared at the head of two new organizations, the "Trio de Lutèce" (flute, harp, cello), and "The New York Little Symphony" (strings, woodwind, horn). With the latter combination he produced such rarely heard works as Wolf-Ferrari's *Kammersymphonie*, and Saint-Saens's *Septuor*. The Kneisel Quartet began their fall season with Samuel Gardner as second violin in place of Hans Letz, who had been called to the colors. But before the end of the year Mr. Letz was released, and returned none the worse for his exciting experience.

CHORAL SOCIETIES. Although all the choral associations throughout the land were very active, there is not much to be chronicled. A great number of new works were brought out, but very few of them seem likely ever to be repeated again. The New York Oratorio Society (Louis Kommenich) by request repeated Schumann's *Ruth*, which the year before had been received with extraordinary enthusiasm. It also gave a splendid performance of Beethoven's difficult and seldom heard *Missa Solemnis*. The Columbia University Chorus (Walter Henry Hall) seems to follow the policy of bringing out one new work every year. This year it was Hamilton Harty's *Mystic Trumpeter*, a very difficult and extremely modern composition. Handel's *Acis and Galatea* was given in concert form, but failed to make any impression; it sounded hopelessly dull and antiquated. Two novelties that were heard with real interest were produced by the Schola Cantorum (Kurt Schindler). Zandonai's *Padre Nostro* shows the composer in a far more favorable light than his opera *Conchita*. Verdi's *Stabat Mater*, one of the master's last works, is in the same style as his *Manzoni Requiem*, full of intensely dramatic moments; rather theatrical than religious. Another novelty, Balfour Gardiner's *News from Whydah*, did not deceive the discriminating listener with its enormous technical apparatus as to the real poverty of the musical ideas. From Chicago came the news of the reignation of the Rev. William J. Finn as director of the Paulist Choristers, who under his direction have become world-famous.

FESTIVALS. The twenty-first biennial Cincinnati May Festival, under the direction of Ernst Kunwald, was the most successful in the history of the association. The works performed were Bach's *Mass in B minor*, Berlioz's *Damnation de Faust*, Verdi's *Requiem*, and Beethoven's *Ninth Symphony*. The work chosen for performance at the ninth annual Bach Festival at Bethlehem, under Dr. Wolle, was the master's *Mass in B minor*. A radical departure from tradition was the rendering of all solo passages by the full chorus. The presence of the distinguished Finnish composer, Jean Sibelius, gave a special significance to the twenty-eighth festival of the Litchfield County Choral Union, held at Norfolk, Conn. Sibelius conducted nine of his own compositions, among them the symphonic poem *Aalottaret*, specially composed for the occasion. Other novelties were Henry K. Hadley's symphonic poem *Lucifer* (after Vondel's poem), Coleridge-Taylor's *The Prairie*, and the overture to Wagner's early opera *Die Feen*. At the sixth North Shore Festival, held at Evanston, Ill., a chorus of 1000 voices, assisted by the Chicago Symphony Orchestra, under Frederick Stock, rendered Haydn's *Creation*, Pierné's *St. Francis of Assisi*, and Harty's *Mystic Trumpeter*. The thirty-fourth festival of the North American Sängerbund was held at Louisville. Louis Ehrgott of Cincinnati directed the monster chorus of 3000 male voices, assisted by a chorus of 2000 children's voices. The fifty-seventh annual Worcester Festival was held under the direction of Arthur Mees and Gustav Strube. The principal numbers were Mendelssohn's *Elijah* and Wolf-Ferrari's *Vita Nuova*. Strube scored a decided success with his new symphonic poem *Lorelei*. The American Union of Swedish Singers held their sixth quadrennial festival at Minneapolis. Fifty-four societies were represented. The festival conductor, Hjalmar Nilsson, directed a chorus of more than 1000 singers, supported by the Minneapolis Symphony Orchestra. The programme consisted exclusively of works by Scandinavian composers.

OPERA. At the Metropolitan Opera House of New York, 163 performances were given from a repertory of 39 operas by 22 composers. According to nationality these were divided as follows: German, 16 works by 7 composers totaled 65 performances; Italian, 16 works by 8 composers totaled 74 performances; French, 5 works by 5 composers totaled 15 performances; Russian, 1 work totaled 6 performances; American, 1 work totaled 3 performances. Wagner, represented by 9 works, led with 34 performances. Next in order came Puccini, of whom 5 works achieved 29 performances. Third ranked Verdi with only 3 works and 17 performances. The work most frequently given was Strauss's *Der Rosenkavalier*, 9 times. Next came Verdi's *Aida*. Puccini's *Madama Butterfly*, and Leoncavallo's *Pagliacci*, each 8 times. Wagner's *Walküre*, Puccini's *La Bohème*, and *Tosca* were each given 7 times. Four novelties were produced.

Montemezzi's *Amore dei tre Re* (January 2) with Bori, Ferrari-Fontana, Amato, and Didur in the principal rôles, under Toscanini, was received with marked enthusiasm; and very deservedly so. The text of Sem Benelli deserves the highest praise. The language is forceful and poetic; the intensely dramatic situations are led to logical and powerful climaxes; each character is drawn with a few masterly strokes, and stands out in bold relief. The music is characterized by power of thematic invention, sincerity, and distinction. Everywhere it follows the dramatic situation faithfully and expressively. Some half dozen themes are employed as typical phrases, but they are not developed nor transformed like Wagner's motives. The instrumentation reveals a remarkable and unerring instinct for orchestral color as a means of expression, and the master's restraining hand is felt even in passages delineating violent emotions. It is only to be hoped that the composer will continue in this path, which leads directly away from the brutal verity of Puccini and his contemporaries, back to the healthy and artistic realism of the immortal composer of *Otello* and *Falstaff*.

Victor Herbert's *Madeleine* (January 24) with Alda, Sparkes, and Althouse, under Polacco, was an unqualified failure. The music is so light, that the work is better called an operetta. But even so, it might have achieved some success, if the score did not bear the earmarks of having been put together hastily without a trace of inspiration. To make the fiasco more complete, this anæmic work was directly followed by Leoncavallo's intensely dramatic *Pagliacci*. This mistake was rectified at the only two repetitions, when *Madeleine* and the equally colorless *Don Pasquale* filled the evening.

Neither did the next novelty, Charpentier's *Julien* (February 26) with Farrar and Caruso, under Polacco, repay the energy expended upon its production. The librettist seems to have no clear idea as to the boundary line between realism and vulgarity. In a labored effort to follow the text faithfully, the music becomes fragmentary and incoherent. The leading motives are commonplace. In a few well constructed climaxes the music completely fails to rise to the height of the dramatic situation. The whole score lacks individuality and distinction. In spite of magnificent stage setting and a splendid artistic performance the work made no impression.

Wolf-Ferrari's *L'Amore Medico* (March 25) with Bori, Alten, and Cristalli, under Toscanini, proved to be a charming work, a real opera buffa of the old style, but with vital, modern music. It has the grace, lightness, and melodic charm of Rossini combined with German earnestness and thoroughness. The public received the work cordially. The production of *Carmen* with Farrar and Caruso, under Toscanini, aroused a frenzy of enthusiasm. It seems that at last people begin to realize that *Carmen*, even without Calvé, is, and promises to remain for many years, one of the masterpieces of operatic literature.

One of the most emphatic successes scored by the management was the revival of Weber's *Euryanthe* (December 19). The principal rôles were in the hands of Hempel, Ober, Sembach, and Weil, while Toscanini occupied the conductor's chair. In spite of the fact that some portions sounded old-fashioned, the greater part of the music proved still sufficiently vital to rouse the audience to demonstrations of real enthusiasm. To the present generation of opera-goers *Euryanthe* is practically a novelty, for no performances of it have been heard in New York since 1887.

Of the new artists Lucrezia Bori, who had been heard only in smaller parts, revealed herself as a star of the first magnitude when her opportunity came in Montemezzi's new opera. Rudolf Berger, the much-heralded tenor of the Berlin Opera, proved only an acceptable artist, but Edoardo Ferrari-Fontana, Luca Botta, and Johannes Sembach were recognized as tenors of the first rank. The list of established artists included Mmes. Gadski, Destinn, Hempel, Farrar, Alda, Homer, Matzenauer, and Ober; and Messrs. Caruso, Urlus, Jörn, Martinelli, Althouse, Cristalli, Braun, Goritz, Weil, Witherspoon, Schlegel, and Rothier. The conductors were Toscanini, Hertz, and Polacco.

The Chicago-Philadelphia Opera Company achieved its greatest success with a superb production of *Parsifal* (January 4) under Campanini. Two novelties, Giordano's *Fedora* (January 6) and Gnecchi's *Cassandra* (February 26), met a lukewarm reception. A tour of the West, undertaken after the close of the regular season, ended disastrously. Owing to the outbreak of the war the season 1914–15 was canceled. The Boston Opera Company scored its principal success with Wagner's *Meistersinger*, which was added to its repertory on January 23. On the whole, the season was remarkable more for the triumphs of individual artists than for excellence of ensemble. The season 1914–15 was also canceled because of the war.

When the Century Opera Company closed its first season, somewhat earlier than had been originally intended, there still remained a number of unfulfilled promises. Chief among these was the projected cycle of Wagner's works. But after the inadequate production of *Lohengrin*, which disclosed some serious defects of the organization, it was the part of wisdom not to attempt the more difficult dramas. At the reopening in the fall it was at once evident that the shortcomings had been effectively remedied. Especially the new conductors, Ernst Knoch and Agide Jacchia, did excellent work with the improved chorus and orchestra. Yet the public failed to respond. During the month of December the company played in Chicago—before empty houses, although all the critics were unanimous in their praise of the excellence of the performances. As the year ended word was received that the Chicago engagement was brought to a close two weeks earlier than had been agreed, and rumor had it that the entire organization was to disband.

EUROPEAN COUNTRIES

GERMANY. Upon the activities of the more important organizations of the larger cities the war seems to have had little influence beyond a slight reduction in the size of orchestras. The almost complete absence of novelties on the programmes seems to have been felt rather as a welcome relief than a hardship by the audiences that were as numerous and appreciative as under normal conditions. The stress of the times, however, manifested itself in a material sense in a general reduction of salaries and prices of admission. Many of the lesser artists found themselves without engagement. In Berlin the unemployed orchestral players formed themselves into the Freie Orchester Vereinigung for the purpose of giving concerts for the benefit of needy musicians, and this undertaking proved highly successful, thanks to the generous coöperation of the foremost conductors, who gave their services gratuitously. All the greatest artists, such as Lehmann, Culp, Hempel, Wüllner, Slezak, Busoni, Burmester, Scharwenka, and a host of others, gave concerts for the Red Cross and the War Relief Fund. The famous Berlin Philharmonic Chorus, under Siegfrid Ochs, gave its usual four concerts, and turned over all receipts to the Relief Fund. In Bayreuth 400,000 marks had been paid for tickets when the war interrupted the festival. The holders of tickets unanimously refused the return of their money, and requested that the entire sum be donated to the Relief Fund. To what length mistaken patriotic zeal, when carried into the cosmopolitan and neutral domain of art, will go, was unhappily illustrated by the dissolution of the famous Internationale Musikgesellschaft of Leipzig. Since its foundation in 1899 the publications of this society have been of far-reaching influence through the dissemination of the results of musical research on the part of the world's foremost scholars.

New Year's Day witnessed the performance of Wagner's *Parsifal* on almost every operatic stage throughout the Empire. According to all accounts no pains had been spared to meet to the fullest extent the composer's intentions. Everywhere the work was received with profound reverence, and had many repetitions before crowded houses. Munich, however, postponed the local première till May 22, Wagner's birthday. The ninetieth Nether-Rhenish Music Festival was held at Düsseldorf under Karl Panzner. For some years past these famous festivals have suffered through the growing rivalry between the two cities of Cologne and Düsseldorf. Matters came to a climax this year when Cologne not only refused to coöperate, but even arranged an independent Beethoven Festival on the same days, with the result that both festivals closed with a considerable deficit. Of the few novelties Humperdinck's opera *Die Marketenderin* had a rather unusual fate. On its initial production at Weimar, in May, it was received with little favor; but after the outbreak of the war it vied in popularity with Wagner's *Meistersinger*. This sudden success of *Die Marketenderin,* in spite of its colorless music, is due entirely to the text with the idolized Blücher as the central hero. At Dessau Christian Sinding achieved a genuine success with his latest opera, *Der Heilige Berg,* while the favorable reception accorded Weingartner's *Kain und Abel* at Darmstadt is to be attributed rather to the personality of the great conductor than to the intrinsic merit of the music. In the field of instrumental music the honors were carried off by two American composers, Leslie Loth (*Symphony in A*) and Edgar Stillman-Kelly (*New England Symphony*). Throughout Germany the fiftieth anniversary of the birth of Richard Strauss (June 11) was observed by performances of his works.

FRANCE. In no other country was the musical life so completely paralyzed by the war as in France. An event of prime importance in the history of the Grand Opéra was the first performance in France of *Parsifal* under the direction of André Messager (January 2). Eighty rehearsals had been held; the scenic effects were of unparalleled splendor; the receipts of 50,000 francs established a record for any single night in the history of the institution. Yet the critics missed the full effect of the musical climaxes and the real spirit. From April 25 to June 19, Henry Russell, with the Boston Opera Company, gave a season of grand opera at the Théâtre des Champs Elysées. The opening work was Montemezzi's *Amore dei Tre Re,* which a few weeks before had scored such emphatic success in America. It met with a decidedly cool reception. Wolf-Ferrari's *Il Segreto di Suzanna,* a novelty for Paris, proved a complete failure. The unquestionable artistic triumph of the season was largely due to the inspired performances, under Weingartner, of Wagner's works. Under the personal direction of the composer Richard Strauss's *La Légende de Joseph* had its world-première at the Grand Opéra, and was received with tumultuous applause. Several French critics not only praised the exquisite melodies and splendid climaxes, but proclaimed certain portions as the most inspired music yet written by the German master. At Monte Carlo Massenet's posthumous *Cléopatre* proved a great success.

ENGLAND. The activities of the larger organizations were little affected by the war The usual fall seasons of opera at Covent Garden and Drury Lane, however, had to be abandoned because of their entire dependence upon foreign artists. London did not hear *Parsifal* until February 2. According to all reports the work made a profound impression. The spring season at Covent Garden was of unusual interest and excellence. After 20 years of undeserved neglect Verdi's *Falstaff* was revived with immense success. Under Nikisch the Ring dramas were given with entirely new and splendid scenery. Albert Coates, a pupil of Nikisch, alternated with his master in the direction of the Wagner works, and made a particularly deep impression in *Tristan und Isolde*. An American singer, Maude Fay, a member of the Munich Opera, attracted special attention in the rôles of Elsa and Sieglinde. Montemezzi's *Amore dei tre Re,* the only novelty, made no impression. Sir Thomas Beecham gave a successful season of Russian opera in English at Drury Lane. *Dylan,* the second part of Holbrooke's ambitious trilogy, was produced for the first time on July 4, but failed to win favor. Skriabine made his first visit to England, playing his own works in recitals to very appreciative audiences. On the other hand, the works of Leo Ornstein, an extreme futurist, were received with most emphatic disapproval. Richard Strauss was present at the initial performance of his *Legend of Joseph,* and also conducted a concert of his own works, scoring a veritable triumph. Before an enthusiastic audience Patti gave a concert in Albert Hall for the benefit of the Red Cross.

Bibliography. Among the important books published during the year are the following:

Biographical. L. Vuillemin, *G. Fauré* (Paris); F. Cellier and C. Bridgeman, *Gilbert and Sullivan and Their Operas* (London), rather anecdotal than strictly biographical or critical; Lilli Lehmann, *My Path Through Life* (New York), a translation of the famous singer's book, *Mein Weg,* by Alice B. Seligman; O. Huckel, *Wagner: The Man and His Work* (New York), compact, yet no essentials are omitted; E. Newman, *Wagner as Man and Artist* (New York), brief, clear, appreciative.

History of Music. P. Aubry, *Trouvères and*

Troubadours (New York), in translation by C. Aveling; J. Combarieu, *Histoire de la musique des origines jusqu' à la mort de Béethoven* (Paris), vol. ii, covering the seventeenth century to 1827, completes the work, an authoritative and detailed reference book; G. Cucuel, *La Pouplinière et la musique de chambre au dixhuitième siècle* (Paris), full of valuable information regarding the early history of public concerts; *Id., Les créateurs de l'opéra comique français* (Paris), an authoritative and critical analysis of the different styles with full bibliography; A. H. Fox-Strangways, *The Music of Hindustan* (Oxford), an exhaustive history of both the art and theory with numerous examples in notation; M. A. deW. Howe, *The Boston Symphony Orchestra* (Boston), a valuable contribution to the development of musical taste in America; E. Istel, *Das Libretto* (Berlin), philosophical rather than historical; C. Mauclaire, *Histoire de la musique européenne* (Paris), confines itself to the period 1850–1914, a clear and critical exposition of modern tendencies and styles; M. Montagu-Nathan, *A History of Russian Music* (London), superficial and uncritical, but as yet the only book in English dealing with the subject; R. Newmarch, *The Russian Opera* (New York), a good and accurate account based on independent and painstaking investigation; H. Prunières, *L'Opéra Italien en France avant Lulli* (Paris); B. Selva, *La Sonate* (Paris), very complete and authoritative—also in abridged form under title: *Quelques mots sur la sonate;* William G. Rice, *Carillons of Belgium and Holland* (New York), the result of painstaking and careful original investigation, deriving additional value from the fact that perhaps many of the towers and sets of carillon bells described have been destroyed by the war.

Theory and Criticism. C. Forsyth, *Orchestration* (London), very full with numerous illustrations from the scores of the greatest modern masters; J. Hofmann, *Piano Playing with Piano Questions Answered* (New York), eminently practical, covers every conceivable phase of the subject; L. Peralté, *L'Esotérisme de Parsifal* (Paris), a remarkably able and sympathetic study of the drama and its sources; A. M. Richardson, *The Choir Trainer's Art* (New York), deals with the question of voice training and practical questions of management.

MYER, Albert Lee. American soldier, died July 17, 1914. He was born in Troy, N. Y., in 1846, and at 19 years of age enlisted as a private in the Eleventh Infantry in 1865. In 1868 he was appointed second lieutenant, and was successively promoted, in 1886 captain, in 1899 major, in 1901 lieutenant-colonel, and in 1903 colonel of the Seventeenth Infantry. He became a brigadier-general in 1907, and in 1910 retired, having reached the age limit. General Myer held every noncommissioned and commissioned rank up to that in which he was retired. In his long service he fought against the Indians on the plains, was conspicuous in the war with Spain, and later in the Philippine insurrections, and also was many years in service on the Texas border.

NATAL. One of the four original provinces of the Union of South Africa (q.v.). Pietermaritzburg is the headquarters of the provincial government, with 29,980 inhabitants, exclusive of military. Durban is the largest town and only port. The European population of the province has increased threefold since 1879. Of the total population in 1911 (1,194,043), 98,114 were European, 962,490 were natives, 133,439 were Indians and other Asiatics. Total males, 564,648; females, 629,395. Population of the borough of Durban, 69,187; Pietermaritzburg, 30,555. Primary education is controlled by the provincial administration. The aggregate number of European pupils in government and inspected schools was 16,297 in 1911. The 231 government-aided schools for natives had an enrollment of 17,852; there were 34 schools for Indian children, with an enrollment of 3532.

At the end of 1911 there had been alienated 8311 acres of land, besides 2,203,000 conditionally alienated. Throughout the province fruits, vegetables, black wattle, and cereals are grown. There are large plantations of sugar and tea on the coast and in Zululand. The output of corn in 1911 totaled 1,805,745 muids (of 200 pounds); tea, 5,007,090 pounds; sugar, 79,633 tons; tobacco, 2,685,037 pounds. In 1911 there were in the province 75,567 horses, 456,087 cattle, 1,519,268 sheep, 989,274 goats, 110,332 swine, 15,602 mules, 28,011 asses, and 4111 ostriches. There are extensive and valuable mineral deposits. At Durban a whaling industry is carried on. The number of whales killed and landed in 1911 was 992 humpbacks, 2 blue, 7 shad, 3 herring, 2 right, 12 rorquals. C. J. Smythe was provincial administrator in 1914. See South Africa, Union of, for area, population, and other statistical details.

NATIONAL ACADEMY, Exhibitions of. See Painting and Sculpture.

NATIONAL BANKS. This article contains only statistics of resources, liabilities, and circulation. An account of the establishment of the new Federal Reserve system will be found under Banks and Banking. Other matters relating to national banks is included in the article on Financial Review. See also Money; Coins.

Statistics. According to the report of the Comptroller of the Currency on Sept. 12, 1914, there were 7538 national banks in the United States, with total resources of $11,483,529,000. This was an increase of nearly $600,000,000 during the year. Total loans and discounts amounted to $6,400,767,000. Other items of resources were: United States bonds, $791,419,000; other bonds and stocks, $941,723,000, not including $392,663,000 of miscellaneous securities deposited to secure circulation. Gold coin and certificates, $503,059,000; other specie, $243,139,000; legal tender notes, $157,508,000.

Among the liabilities the principal item was $5,043,531,000 of individual deposits subject to check. Other items were: Capital stock paid in, $1,060,332,000; surplus, $724,138,000; undivided profits, $287,343,000; national bank notes outstanding, $918,270,000; and $1,095,550,000 of certificates of deposit and certified in cashiers' checks.

NATIONAL DEFENSE. See Military Progress.

NATIONAL GUARD. See Militia.

NATIONAL MUSEUM. See United States National Museum.

NATIONAL PEACE CONFERENCE. See International Arbitration and Peace.

NATURAL GAS. See Gas, Natural.

NAVAL AËRONAUTICS. See Aëronautics.

NAVAL PROGRESS. The normal development of the navies of the world in 1914 was upset by the great war. And all possible secrecy was thrown over naval affairs for many months after the war's outbreak. So far as could be ascertained at the end of the year, each of the belligerents was pushing work as rapidly as possible on the ships building or provided for at the beginning of hostilities. Submarines and aircraft were being constructed as fast as possible, but the particulars were not obtainable. The following tables are from the official statement of the United States Office of Naval Intelligence:

WARSHIP TONNAGE

of the various powers on July 1, 1914:

Tonnage Completed		*Tonnage Completed and Building*	
Great Britain	2,157,850	Great Britain	2,714,106
Germany	951,718	Germany	1,306,577
United States	765,133	France	899,915
France	688,840	United States	894,889
Japan	519,640	Japan	699,916
Italy	285,460	Russia	678,818
Russia	270,861	Italy	497,815
Austria-Hungary	221,526	Austria	347,508

WARSHIP TONNAGE

of the principal naval powers on July 1, 1914, showing number and displacement of ships built and building of 1500 or more tons, and of torpedo-craft of more than 50 tons:

The following vessels are not included in the tables: Ships over 20 years old from date of launch, unless they have been reconstructed and rearmored within 5 years; torpedo craft over 15 years old; ships which have not actually been begun or ordered, even if authorized; transports, colliers, repair ships, torpedo depot ships, or other auxiliaries; vessels of less than 1500 tons, except torpedo-craft; torpedo-craft of less than 50 tons. Vessels undergoing trials are considered as completed.

BRITISH NAVY. At the outbreak of the war the active fleets of the British navy were:

A. First Fleet (8 squadrons—44 fighting ships)
    27 dreadnoughts
    1 predreadnought
    4 battlecruisers
    8 armored cruisers
    4 light cruisers
B. Second Fleet (4 squadrons—24 fighting ships)
    16 predreadnoughts
    8 armored cruisers
C. Third Fleet (8 squadrons—40 fighting ships)
    16 predreadnoughts
    24 cruisers of various kinds
D. Mediterranean Fleet (3 squadrons—11 ships).

	GREAT BRITAIN f				*GERMANY*			
	Built		*Building*		*Built*		*Building*	
Type of Vessel	*No.*	*Tons*	*No.*	*Tons (est.)*	*No.*	*Tons*	*No.*	*Tons (est.)*
Battleships (dreadnought type) *a*	20	423,850	16	421,750	13	285,770	7	187,164
Battleships (predreadnought) *b*	40	589,385	..	....	20	242,800	..	....
Coast-defense vessels *c*	..	....	..	....	2	8,168	..	....
Battle cruisers *d*	9	187,800	1	28,500	4	88,749	4	112,000
Armored cruisers	34	406,800	..	....	9	94,245	..	....
Cruisers *e*	74	382,815	17	67,000	41	150,747	5	26,900
Torpedo boat destroyers	167	125,850	21	21,770	180	67,094	24	14,400
Torpedo boats	49	11,488	..	....	..	....	..	....
Submarines	75	30,362	22	17,236	27	14,140	18	14,400
Total tons	..	2,157,850	..	556,256	..	951,718	..	354,864
Total tons, built and building	..	2,714,106				1,306,577		

	UNITED STATES				*FRANCE*			
	Built		*Building*		*Built*		*Building*	
Type of Vessel	*No.*	*Tons*	*No.*	*Tons (est.)*	*No.*	*Tons*	*No.*	*Tons (est.)*
Battleships (dreadnought type) *a*	8	189,650	4	117,800	4	92,368	8	193,656
Battleships (predreadnought) *b*	22	309,282 *h*	..	....	18	262,675	..	....
Coast-defense vessels *c*	4	12,900	..	....	1	8,800	..	....
Battle cruisers *d*		....	..	....	..	....	..	....
Armored cruisers	11	149,295	..	....	20	201,724	..	....
Cruisers *e*	14	66,410	..	....	9	46,095	..	....
Torpedo boat destroyers	51	35,068	11	11,956	84	35,812	8	2,653
Torpedo boats	13	2,528	..	....	135	13,426	..	....
Submarines	30	....	19 *g*	....	64	27,940	22	14,766
Total tons		765,133	..	129,756	..	688,840	..	211,075
Total tons built and building		894,889 *k*				899,915		

	JAPAN				*RUSSIA*			
	Built		*Building*		*Built*		*Building*	
Type of Vessel	*No.*	*Tons*	*No.*	*Tons (est.)*	*No.*	*Tons*	*No.*	*Tons (est.)*
Battleships (dreadnought type) *a*	2	41,600	4	122,400	..	....	7	159,409
Battleships (predreadnought) *b*	13	191,380	..	....	7	98,750	..	....
Coast-defense vessels *c*	2	9,086	..	....	2	10,880	..	....
Battle cruisers *d*	2	55,000	2	55,000	..	....	4	128,000
Armored cruisers	13	138,483	..	....	6	63,500	..	....
Cruisers *e*	13	57,915	..	....	9	52,845	8	53,600
Torpedo boat destroyers	50	20,487	2	1,676	91	36,748	44	53,664
Torpedo boats	27	3,017	..	....	14	2,132	..	....
Submarines	13	2,672	2	1,200	30	6,506	19	13,284
Total tons		519,640	..	180,276	..	270,861	..	407,957
Total tons built and building		699,915				678,818		

Type of Vessel		*ITALY*				*AUSTRIA-HUNGARY*		
		Built	*Building*		*Built*		*Building*	
	No.	*Tons*	*No.*	*Tons (est.)*	*No.*	*Tons*	*No.*	*Tons (est.)*
Battleships (dreadnought type) *a*	3	62,644	7	187,150	3	60,030	4	93,510
Battleships (predreadnought) *b*	8	96,100	..	....	6	74,613	..	....
Coast-defense vessels *c*		....	..	....	6	41,700	..	....
Battle cruisers *d*		....	..	....	..	....	..	....
Armored cruisers	9	74,020	..	....	2	13,380	..	....
Cruisers *e*	6	18,830	2	4,888	5	13,815	5	21,216
Torpedo boat destroyers	36	16,807	15	14,203	18	9,450	..	....
Torpedo boats	68	11,584	2	272	39	6,852	24	5,886
Submarines	19	5,475	8	5,842	6	1,686	6	5,370
Total tons		285,460	..	212,355	..	221,526	..	125,982
Total tons built and building		497,815				347,508		

a Battleships having a main battery of all big guns. (11 inches or more in calibre.)

b Battleships of (about) 10,000 or more tons displacement, whose main batteries are of more than one calibre.

c Includes smaller battleships and monitors.

d Armored cruisers which have main battery guns of the same calibre as the heavy guns of contemporary battleships and are capable of taking their place in line of battle with the battleships. They have an increase of speed at the expense of carrying fewer guns in main battery and a decrease in armor protection.

e All unarmored, or very lightly armored, warships of more than 1500 tons are classed as cruisers. Scouts are considered as cruisers in which battery and protection have been sacrificed to secure extreme speed. The word "protected" has been omitted because all cruisers except the oldest and smallest have protective decks.

f Colonial vessels included.

g Includes 3 submarines authorized in 1913; contract for fourth not yet awarded.

h Does not include *Idaho* and *Mississippi*, recently sold, or ships of current programme for which contracts have not been awarded.

k Exclusive of submarine tonnage.

Since July 1, 6 new battleships and 1 battlecruiser were completed, and 6 others were to be finished in the first six months of 1914. Two battleships (*Sultan Osman I*, and *Reshadieh*), building in England for the Turkish navy, were taken over and renamed *Agincourt* and *Erin*. Two very large destroyers building for the Chilean navy, and 3 small river monitors completed for Brazil also were taken or purchased. On July 1 there were approximately 31 destroyers and 24 submarines building. Some of these (perhaps one-half) were at the end of the year completed, and others had been commenced. In addition to the vessels of the active fleet, many old battleships and cruisers in reserve and on the list for sale or breaking up were put in order, placed in commission, and were being utilized in the blockade and special service. The command of the British grand fleet was given to Admiral Sir J. R. Jellicoe.

GERMAN NAVY. The German active navy on Aug. 1, 1914, consisted of the High Seas Fleet composed of three battleship squadrons; one cruiser squadron (4 battlecruisers, 8 light cruisers); seven destroyer flotillas of 12 boats each; and three submarine flotillas of 7 boats each. The battleship squadrons consisted of 13 dreadnoughts and 8 predreadnoughts. The Reserve Fleet consisted of 12 predreadnought battleships, 6 armored cruisers, 16 light cruisers, 40 to 50 destroyers, and about the same number of torpedo boats. Of the ships building at the end of the year, 3 dreadnought battleships and 1 battlecruiser were practically completed and soon joined the fleet. Of the 12 destroyers and 12 or more submarines building at the outbreak of war there was no information by the end of the year, but it was presumed that many had been completed, and work on the others was pushed as fast as possible. On foreign stations there were: In the Mediterranean, the battlecruiser *Goeben* (22,600 tons) and light cruiser *Breslau* (4500); in the Pacific, the armored cruisers *Scharnhorst* and *Gneisenau* of 11,400 tons, and the light cruisers *Emden* (3600), *Königsberg* (3350), *Nürnberg* (3400), and *Leipzig* (3200); in the Atlantic, the light cruisers *Karlsruhe* (4800) and *Dresden* (3600). In various parts of the world there were some old gunboats and small cruisers of old type and no fighting value.

FRENCH NAVY. At the beginning of the war the French navy, which had been greatly improved in the previous eight years, was chiefly concentrated in the Mediterranean. Including ships in the first reserve, there were available 4 dreadnoughts, 23 predreadnoughts, 20 armored and heavily protected cruisers, 11 light cruisers, 84 destroyers, 153 torpedo boats (fit for harbor and coast service only), and 70 submarines. Some of the cruisers were on foreign stations. Three dreadnought battleships which were building were practically ready for service at the end of the year, and two others were to be ready in six months.

RUSSIAN NAVY. The Russian navy had not recovered from the Japanese War. In the Baltic there were available on July 1, 1914, 4 predreadnought battleships, 14 armored and protected cruisers, 2 light cruisers, 80 destroyers, 24 submarines. Four dreadnought battleships were probably completed at the end of the year, but were not to be sent out against superior German forces. Four battlecruisers were laid down two years before, but had not been launched so far as known. Of the 44 destroyers and 19 submarines building six months ago, a considerable number should have been completed, but no information concerning them leaked out. In the Black Sea the Russian naval force consisted of 6 predreadnoughts, 2 large cruisers, 16 destroyers, 16 torpedo boats, and 5 submarines.

AUSTRIA-HUNGARY. At the outbreak of the war Austria-Hungary had almost as many tons of war-vessels under construction as the United States. There were ready for service, 3 dreadnoughts, 9 predreadnoughts, 5 coast defense vessels, 2 armored cruisers, 12 light cruisers (including 3 building but practically completed), 19 destroyers, 11 submarines, and 58 torpedo boats (mostly of about 200 tons and launched 1905–10). One dreadnought had been completed since July, and four more were to have been commenced, but reports at the end of the year stated that no work had been done on them.

Japan. The condition of the Japanese navy is shown in the foregoing tables. Two new battlecruisers could be finished in a short time, as could two of the battleships, but funds were said to be lacking.

Naval Operations of the War

At the outbreak of the war, the British fleet at once moved to blockade the German navy in its own harbors. The German High Seas Fleet retired to the Baltic and the Kaiser Wilhelm Canal. The battlecruiser *Goeben*, the armored cruisers *Scharnhorst* and *Gneisenau*, the light cruisers *Emden*, *Königsberg*, *Nürnberg*, *Leipzig*, *Karlsruhe*, *Dresden*, and *Breslau*, and several gunboats and small old cruisers were barred out of German home ports by the cordon the British fleet drew about them. The gunboats and old cruisers retired to neutral ports and were interned. The light cruisers entered upon a career of commerce destroying varied by attacks upon inadequately defended British naval stations. In this they were assisted by several German merchant ships which were hastily transformed into auxiliary cruisers. The career of the German vessels was spectacular, but in most cases comparatively brief. The *Goeben* and *Breslau*, which were in the Mediterranean, were forced to the eastward by the French and British squadrons, and on August 11 entered the Dardanelles. Shortly afterward they were sold to Turkey. This sale was objected to by the British, French, and Russian governments, but before the question was settled, Turkey joined in the war as an ally of Germany and Austria.

The armored cruisers *Scharnhorst* and *Gneisenau* were each of 11,400 tons, carrying eight 8.2-inch guns, and six 5.9-inch, four 8.2-inch in turrets—one forward, one aft—and two 8.2-inch on each beam in single casemates. These vessels in appearance, battery, and armor, closely resembled the United States armored cruiser *Brooklyn*. They were in the Pacific when the war broke out, and did some damage to British commerce and to one or two naval and supply stations, but their first move of importance consisted in effecting a junction with the light cruisers *Nürnberg* (3400 tons—24 knots speed—10 4.1-inch guns), *Leipzig* (3200 tons—23 knots—10 4.1-inch), and *Dresden* (3600 tons—24.5 knots—10 4.1-inch), in the latter part of October. On November 1, the squadron thus formed, under command of Admiral Count von Spee, met a British squadron under Vice-admiral Sir Christopher Cradock, and consisting of the armored cruisers *Good Hope* (14,100 tons—2 9.2-inch guns in turrets, 16 6-inch guns in casemates—23 knots speed), *Monmouth* (9800 tons—14 6-inch—22.5 knots), the light cruiser *Glasgow* (4820 tons—2 6-inch, 10 4-inch—25 knots), and the merchant steamer *Otranto*, which had been fitted with a light armament. The sea was very rough, many guns of the British armored cruisers were mounted so low as to be useless in rough weather, while the other guns were ridiculously small in calibre or number for the size of the ships. The German force won with ease, sinking the *Good Hope* and *Monmouth*, and injuring the others, but not to an extent to prevent their escape. No German ships were damaged, none of their men were killed, and only six wounded. This victory enormously increased German prestige and stimulated German naval enthusiasm. Unfortunately Admiral von Spee did not live to reap the reward of his executive ability and fighting capacity. The crushing defeat of Cradock's squadron was a blow to British pride. Moreover, the existence of the German vessels threatened British seaborne trade. Very quietly the Admiralty despatched a strong force in search of the conquerors. This consisted of two battle cruisers, the *Inflexible* and *Invincible* (17,250 tons, 26 knots speed, 7-inch belt and turrets, and 8 12-inch guns); three armored cruisers, the *Carnarvon*, *Cornwall*, and *Kent*—the last two being sister ships to the *Monmouth*, the other a little stronger; an old, weakly armored battleship, the *Canopus* (13,000 tons, 6-inch belt, 8-inch turrets, 18 knots speed, 4 12-inch guns, and 12 6-inch), two light cruisers, the *Bristol* and *Glasgow* (4820 tons, 26 knots speed, 2 6-inch guns, and 10 4-inch). This squadron (partly made up of vessels already in American waters) met Von Spee's near the Falkland Islands on December 8. The action appeared to have been a running fight; but, as the British had an enormous superiority in force, and a little in speed, the German squadron was destroyed, only the *Dresden* escaping.

The light cruiser *Königsberg*, after three months of fairly successful commerce destroying, was bottled up on October 30 in a South African river (the Rufiji), by blocking the channel. The most successful of the light cruisers was the *Emden*. In a little more than three months she sank 23 British merchant vessels valued at $10,000,000, a Russian light cruiser, and a French destroyer, besides destroying oil and supply depots at Madras and Penang. On November 9 she was driven ashore on North Keeling Island (Cocos Group), and destroyed by the Australian light cruiser *Sydney* (5400 tons). At the end of the year the *Karlsruhe*, *Dresden*, and one or two converted merchant steamers were the only German vessels still at large.

The operations in the Baltic and North Sea began with the laying of mines by the Germans, covering all approaches to their coast, and extending far out into adjacent waters. This procedure led the British to practically close the channel entrance to the North Sea by mine fields.

The main German fleet, including all important vessels of the German navy, remained in the Kaiser Wilhelm Canal or behind the fortifications, broad mine fields, and torpedo defense of the German harbors. It was presumed that they were awaiting some more favorable opportunity than occurred during the year, in which to risk a battle with the British forces which were so greatly superior. Until some definite move was made by them or against them, the existing conditions were likely to be maintained, the British fleet submitting to frequent losses of vessels—most unimportant—but protecting British seaborne commerce and preventing all contraband trade with Germany.

The various engagements and losses in this theatre of war are too numerous to mention in detail, the most important being the engagement off Heligoland on August 28, the sinking of the armored cruisers *Hogue*, *Cressy*, and *Aboukir*, and of the battleships *Audacious*, *Bulwark*, and

Formidable. The Heligoland fight was at first between destroyer flotillas and the light cruisers supporting them, but the battle cruiser squadron came up and made the British force overwhelming. No British vessels were sunk, though some destroyers were severely injured The German light cruisers *Ariadne*, *Koln*, and *Mainz*, and two destroyers were sunk. The armored cruisers *Hogue*, *Cressy*, and *Aboukir* (each of 12,000 tons) were sunk on the evening of September 22 by the German submarine *U-9*, the time from the firing of the first torpedo to the sinking of the third ship being one hour and thirty minutes. The cause of the sinking of the *Audacious* (new dreadnought battleship —24,000 tons), on October 27, was not disclosed during 1914; it was either a torpedo from a submarine, or a mine. She was at the time off the north coast of Ireland. The *Bulwark* (predreadnought battleship—15,000 tons) was sunk in Sheerness Harbor, only 35 miles from London, on November 26. It was supposed that her magazines blew up from some unexplained cause, but the Germans claimed that she was torpedoed by one of their submarines.

The operations in the Mediterranean, in the Atlantic, and in the Far East were not very important, but a noteworthy submarine attack took place near Constantinople. A British submarine entered the Dardanelles, dove beneath a mine field consisting of four or five lines of mines and, rising to the surface beyond them, torpedoed and sank the *Mesudieh* (10,000 tons), a Turkish battleship of old type which had recently been reconstructed and rearmed.

A tabulated list of vessels lost by the warring powers shows that 10 (possibly 12), had been sunk by submarines, 25 by mines, 36 by gun fire, 2 by torpedoes from large ships, and a number by foundering and accidents. Six and possibly 8 submarines had been destroyed; 1 was rammed, 2 were sunk by mines, 1 foundered, 1 (and possibly 3) was sunk by gun fire. If the battleships *Audacious* and *Bulwark* were sunk by them, the vessels destroyed by submarines form a very impressive list, and conclusively establish their importance in naval war. But it must not be forgotten that the condition of affairs in the North Sea was very favorable to their operation, so that instead of wondering at the measure of success attained, we might properly be surprised that they had not achieved more, and to expect that they will do so. (See SUBMARINES.)

Destroyers and surface torpedo boats did little in the way of destructive warfare but doubtless were of great service in scouting and acting as screening forces for the larger ships. Their value and the actual service performed by them can only be justly estimated when the full detailed history of the operations is made known.

The destructive power of the modern torpedo was greatly augmented. Few battleships or large cruisers would be sunk by a single torpedo of the types in service five years ago. But the general increase in size to a diameter of about 21 inches, has enabled much larger explosive charges to be carried, for a greater distance, and at a higher speed. Up to the end of 1914 the greater range (8000 yards) and higher speed (50 knots) of the new torpedoes had not been made use of; or if attempts to do so had been made, they failed. The fact that submarines must approach within a short distance of the enemy in order to operate successfully leads to the conclusion that two types of torpedoes are required—one with long range and high speed for use on battleships, heavy cruisers, and surface torpedo craft, and the other of less range but carrying much heavier charges for equipment of submarines.

NAVY. See BATTLESHIPS; NAVAL PROGRESS; and the section *Navy* under various countries.

NEBRASKA. POPULATION. The estimated population on July 1, 1914, was 1,245,873. The population in 1910 was 1,192,214.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	7,100,000	173,950,000	$92,194,000
	1913	7,610,000	114,150,000	74,198,000
Wheat ...	1914	3,668,000	68,116,000	64,710,000
	1913	3,475,000	62,325,000	44,251,000
Oats	1914	2,175,000	69,600,000	27,840,000
	1913	2,250,000	59,625,000	22,658,000
Rye	1914	122,000	1,952,000	1,444,000
	1913	120,000	1,740,000	1,044,000
Barley ...	1914	113,000	2,656,000	1,248,000
	1913	110,000	1,760,000	802,000
Potatoes .	1914	118,000	9,440,000	5,098,000
	1913	118,000	5,664,000	4,418,000
Hay	1914	1,500,000	*a* 2,535,000	17,492,000
	1913	1,250,000	1,675,000	14,572,000

a Tons.

MINERAL PRODUCTION. Nebraska's only contribution to the total mineral production of the country is from its clay deposits, its sand and gravel, its stone quarries, the manufacture of sand-lime brick, and the production of volcanic ash or pumice. In the production of the last-named mineral the State holds an almost entire monopoly, less than three per cent of the total production being from other States. The total value of the mineral products in 1913 was $1,433,718, compared with $1,490,582 in 1912.

TRANSPORTATION. The total railway mileage in the State on June 30, 1914, was 6176. The roads having the longest railway mileage are the Chicago, Burlington and Quincy, 2850; Union Pacific, 1185; and the Chicago and North Western, 1070. There was practically no new construction in 1914.

EDUCATION. The total school population of the State in 1914 was 383,882. The enrollment in the public schools in the same year was 288,369, and the average daily attendance was 214,152. The male teachers numbered 1449, and the female 10,569. The average monthly salary of male teachers was $84.23, and of females $58.70.

FINANCE. The report of the State treasurer showed a balance on Dec. 31, 1913, of $640,401. The receipts for the year ending Nov. 30, 1914, amounted to $6,451,742, and the disbursements to $6,346,034, leaving a balance on Nov. 30, 1914, of $746,108. The chief expenditures are for education, State officers, and State institutions. The State has no bonded debt.

POLITICS AND GOVERNMENT. The Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for Governor and representatives to Congress. The Democrats renominated Morehead, the Republicans nominated R. B. Howell, and the Progressives H. E. Sackett. At the elections held on November 3 Governor Morehead was reëlected with 120,206 votes, compared with 101,229 for Howell, Republican, and 8655 for Sackett, Progressive. The total vote cast was 238,717, compared with 249,481 in 1912. The Democratic vote increased about 10,000, the Republican about 50,000, while the Progressive vote fell off about 65,000. The Democrats elected their candidates for Congress in the second, third, and fifth districts, and the Republicans in the other districts. An amendment providing for woman suffrage was voted upon at this election and was defeated. (See WOMAN SUFFRAGE.) Amendments to the constitution providing for an increase in the Governor's salary, to permit five-sixths of a jury to return a verdict in all but capital criminal cases, and to provide for a new revenue system that would permit the adoption of the single tax system were also voted on and defeated. These three propositions were referred to the voters by the Legislature; the woman's suffrage amendment was initiated by petition. Three acts of the Legislature were submitted to the referendum by petition. One, the workmen's compensation law, was endorsed by the voters; the others, one an appropriation for an armory and the other for the removal of the State university to a new campus, were defeated. Conrad G. Hollenbeck was elected to be chief justice of the Supreme Court, defeating Manoah B. Reese, the election being nonpartisan, the nominations by petition.

STATE GOVERNMENT. Governor, John H. Morehead; Lieutenant-Governor, James Pearson; Secretary of State, C. W. Pool; Treasurer, G. E. Hall; Auditor, W. H. Smith; Attorney-General, W. E. Reed; Superintendent of Education, A. O. Thomas; Commissioner of Insurance, ————; Commissioner of Public Lands, Fred. Beekman—all Democrats, except Thomas and Beekman, Republicans.

JUDICIARY. Supreme Court: Chief Justice, Manoah B. Reese; Justices, Chas. B. Letton, Francis G. Hamer, Jacob Fawcett, William B. Rose, John B. Barnes, and Samuel H. Sedgwick; Clerk, H. C. Lindsay—all Republicans.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	20	61	81
Republicans	13	39	52
	—	—	—
Democratic majority	7	22	29

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

NEBRASKA, UNIVERSITY OF. A State university for higher education, founded at Lincoln, Neb., in 1869. The enrollment in all departments in the autumn of 1914 was 4133, and the faculty contained 283 members. There were no notable changes in the faculty during the year and no noteworthy benefactions were received. The university is supported by State appropriations. The productive funds amount to about $775,000 and the annual income to about $1,000,000. The library contains 111,000 volumes. The president is Samuel Avery, Ph.D.

NECROLOGY. The names of persons who died during the year 1914 will be found in the following list. An asterisk preceding a name denotes that a biography occurs in its alphabetical place in the body of the book.

Abbott, John T. Former United States Minister to Colombia. Died March 8; born, 1864.

* Adams, John Lanson. American physician.

Allerton, Samuel W. American merchant. Died February 22; born, 1829.

Amend, Edward Bernard. American jurist. Died October 20; born, 1858.

Ames, William. American soldier and public official. Died March 8; born, 1842.

Anwyl, Sir Edward. Welsh educator and author. Died August 9; born, 1866.

* Aoki, Siuzo, Viscount. Japanese diplomat.

* Argyll, John Douglas Sutherland Campbell, ninth Duke of.

Aucaigne, Felix. American journalist and foreign correspondent for New York *Tribune*. Died March 27; born, 1832.

* Bacon, Augustus Octavius. United States Senator from Georgia.

* Bacon, John. English artist.

* Baer, George Frederick. American lawyer, railway official, and capitalist.

* Bailey, William Whitman. American botanist and educator.

* Bandelier, Adolph Francis Alphonse. American archæologist and historian.

* Bangs, Lemuel Bolton. American physician.

Barker, Sir John. English merchant. Died December 16; born, 1840.

Barlow, Alfred Edward. Canadian geologist. Born, 1861.

Barlow, George. English poet. Born, 1848.

* Barlow, John Whitney. American soldier.

* Bayles, George James. American educator and author.

* Beatty, William Henry. American jurist.

* Beaver, James Addams. American public official, former Governor of Pennsylvania.

* Benjamin, Samuel Greene Wheeler. American author, artist, and diplomat.

* Benson, Robert Hugh. English Roman Catholic priest and writer.

Bentham, George. Irish artist and book collector. Died April 8; born, 1854.

* Bertillon, Alphonse. French penologist.

* Best, Dionysius F. American Roman Catholic priest.

Betancourt, Salvador Cisneros. Cuban statesman. Died February 28; born, 1848.

Bharati, Baba. Hindu philosopher. Died February 19; born, 1859.

* Bickmore, Albert Smith. American naturalist and educator.

* Birkhimer, William Edward. American soldier, jurist, and educator.

Blakeslee, Theron J. American art collector and critic. Died March 7; born, 1853.

Blommers, Johannes Bernardus. Dutch artist. Died December 15; born, 1845.

Boardman, William Henry. American editor and writer. Died February 16; born, 1846.

Bourbon, François Marie, Prince of. Died March 27; born, 1861.

* Bowman, Thomas. American bishop of the Methodist Episcopal Church.

* Brackenbury, Sir Henry. English soldier.

* Bradbury, William Frothingham. American educator and mathematician.

* Bradford, Royal Bird. Rear admiral (retired) of the United States navy.

* Bradley, William O'Connell. United States Senator from Kentucky.

* Bremner, Robert Gunn. Member of Congress from New Jersey.

Breusing, Friedrich A. German admiral and writer on naval subjects. Died October 5; born, 1853.

Brierley, Jonathan. English clergyman and writer. Died February 7; born, 1843.

Bronlow, Elizabeth. American philanthropist, widow of William Gannoway Bronlow, "the fighting parson." Died February; born, 1819.

* Brooks, James Byron. American lawyer and educator.

Brough, Fanny. English comedy actress. Died November 30; born, 1854.

* Brown, Charles Rufus. American theologian and educator.

* Brown, Theron. American clergyman and editor.

Browne, Aldis Birdsey. American lawyer. Died June 1; born, 1857.

* Bryant, Joseph Decatur. American surgeon.

Buck, John Henry. American ecclesiologist. Died January 31; born, 1848.

* Buckner, Simon Bolivar. American soldier.

* Burdette, Robert Jones. American clergyman, humorist, and lecturer.

* Burleigh, Bennet. English war correspondent and writer.

Burns, Edward. American banker. Died May 18; born, 1848.

Busse, Fred A. Former mayor of Chicago. Died July 9; born, 1866.

Butler, Harriet Allen. American philanthropist. Died January 4.

* Bywater, Ingram. English Greek scholar.

* Cadwalader, John Lambert. American lawyer.

* Caldwell, Robert Townley. English scholar and educator.

* Calmette, Gaston. French editor.

* Camden, Johnson Newlon. American public official.

* Campbell, Sir Francis G. English musician and teacher of music.

Campbell, James. American financier and railway official. Died June 12; born, 1847.

Campo, Marquis Aguilar de. Former Spanish Minister of Foreign Affairs. Died February 22.

* Capen, Samuel Billings. American merchant and philanthropist.

Carington, Sir William Henry Peregrine. English official. Died October 7; born, 1845.

* Carleton, Bukk G. American surgeon and writer on medical subjects.

* Carr, Camillo Casatti Cadmus. American soldier.

* Catterall, Ralph Charles Henry. American historian and educator.

* Cawein, Madison Julius. American poet.

* Celli, Angelo. Italian scientist.

Cellier, François. French composer and musical director. Died January 6; born, 1850.

* Chaffee, Adna Romanza. American soldier.

* Chamberlain, Alexander Francis. American anthropologist and educator.

* Chamberlain, Joseph. English statesman.

* Chamberlain, Joshua Lawrence. American soldier and educator.

Chao Ping-chun. Former Premier of the Chinese republic. Died February 27.

* Charles I. King of Rumania.

Clarke, H. Conquest. American newspaper correspondent. Died November 15; born, 1889.

Claybaugh, Henry M. Chief Justice of the Supreme Court of the District of Columbia. Died March 6.

* Clayton, Powell. American soldier and diplomat.

* Coe, Edward Benton. American clergyman of the Dutch Reformed Church.

Cohen, Arthur. English lawyer. Died November 2; born, 1831.

* Colquhoun, Archibald Ross. English traveler and writer.

Cooke, M. C. British mycologist. Born, 1825.

Corwin, Edward Tanjore. Clergyman of the Reformed Church in America. Died June 28; born, 1834.

Countrymen, Edwin. American jurist. Died June 13; born, 1834.

Cox, George A. Canadian public official. Died January 16; born, 1840.

Creamer, Thomas J. Former Congressman from New York. Died August 4; born, 1843.

* Cridler, Thomas Wilbur. American public official.

* Crockett, Samuel Rutherford. Scotch novelist.

Cromwell, Frederic. American insurance official. Died June 22; born, 1843.

Crookshank, Harry Maule. British public official. Died March 25; born, 1849.

* Crosby, John Schuyler. American soldier and public official.

* Cross, Richard Assheton, first Viscount.

* Cullom, Shelby Moore. Former United States Senator from Illinois.

Curtis, James Freeman. American soldier. Died March 2; born, 1826.

Darwin, William Erasmus. Eldest son of Charles Darwin. Died September; born, 1840.

* Daugherty, Jerome. American Roman Catholic priest and educator.

Davies, Henry Fanshawe. English lieutenant-general. Died May 9.

* Davis, George Breckinridge. American soldier.

* Davis, Henry William Banks. English animal painter.

* De la Rey, Jacobus Hendrik. Boer soldier.

* De Leon, Daniel. American Socialist Labor leader.

* De Leon, Thomas Cooper. American author and editor.

* Denison, Henry Willard. American lawyer and diplomat.

* Dennis, James Shepard. American Presbyterian missionary.

* Déroulède, Paul. French poet, author, and patriot.

* Desmoulin, Fernand. French painter, engraver, and philanthropist.

* DeVinne, Theodore Low. American printer.

Dewart, William. Canadian statesman. Died March 30; born, 1837.

Dickinson, David B. American ornithologist. Died March 8; born, 1824.

* Dillon, John Forrest. American jurist.

* Dodge, Grace Hoadley. American educator and philanthropist.

* Dolan, Thomas. American financier.

Dorney, Maurice J. American Roman Catholic priest. Died March 15; born, 1851.

Doughty, Sir George. English Member of Parliament. Died April 27; born, 1854.

Douglas, Sir Charles Whittingham Horsley. English general. Died October 25; born, 1850.

* Draper, Eben Sumner. American manufacturer and public official.

Drew, Gladys (Mrs. Sidney). American actress and playwright. Died January 9.

* Driver, Samuel Rolles. English theologian and educator.

Duguet, Nicolas. French physician. Died July 4; born, 1837.

* Duncan, Robert Kennedy. American chemist and writer.

* Dunlap, Andrew. Rear admiral (retired) of the United States navy.

Dunn, George Walter. American politician. Died November 27; born, 1840.

* Durning-Lawrence, Sir Edwin. English writer and Member of Parliament.

Eaton, Edith. Canadian author. Died April 8.

Edwards, Alfred Charles. Editor of *Le Matin*. Died March 10; born, 1849.

Ellesmere, Francis Charles Granville Egerton, third Earl of. English nobleman and author. Died July 3; born, 1847.

Emmerich, Rudolf. German bacteriologist. Born, 1852.

* Empis, Adolphe, called Simonis. French physician and medical author.

* Fahnestock, Harris Charles. American banker.

* Faure, Jean Baptiste. French singer and composer.

* Fels, Joseph. American manufacturer and philanthropist.

* Felton, Charles. American public official, former United States Senator from California.

Ferrier, Gabriel. French instructor in art. Died June 6; born, 1848.

Ferry, Dr. Milton S. American Methodist Episcopal clergyman and writer. Died July 18; born, 1840.

* Field, Wells Laflin. American rear admiral, retired.

* Fiske, William F. American entomologist.

Forman, Allan, American editor and publisher. Died March 11; born, 1861.

Fortescue, George K. American comedian. Died January 13.

Fournière, Eugène. French socialist. Died January.

* Fowler, Edward Payson. American physician and writer on medical subjects.

Fox, John. American politician. Died January 16; born, 1835.

* Francis Ferdinand (Charles Louis Joseph Marie) of Austria-Este. Austrian Archduke, nephew of the Emperor Francis Joseph and heir-apparent of the Austro-Hungarian monarchy.

Frasch, Herman. American chemist. Died May 1; born, 1848.

* Fraser, Alexander Campbell. A Scotch scholar and educator.

* Fraser-Tytler, Sir James Macleod Bannatyne. Scotch soldier.

* French, William Merchant Richardson. American art critic and lecturer.

Furness, Sir Stephen Wilson. English ship-builder. Died September 6; born, 1872.

Gaffe, Louis Albert. French Roman Catholic priest and Egyptologist. Died July 6; born, 1864.

* Gaines, Reuben Reid. American jurist.

* Gallon, Tom. English novelist.

* Gannett, Henry. American geographer.

* Garofalo, Antonio. Italian physician and medical writer.

Gaskell, Walter Holbrook. English physiologist Died September; born, 1847.

* Genée, Rudolf. German Shakespearian reader and author.

* George II Duke of Saxe-Meiningen and Hiedburghausen.

* Geraghty, Martin John. American Roman Catholic clergyman.

Gerhard, Fred. American musician and orchestra leader. Died October 8; born, 1864.

Gilbey, Sir Walter. British wine merchant and horse breeder. Born, 1831.

* Gill, Sir David. Scotch astronomer.

* Gillett, William Kendall. American scholar and educator.

* Ginsburg, Christian David. English Hebraist.

* Girard, Alfred Conrad. American soldier and surgeon.

* Gobat, Charles Albert. Swiss peace advocate.

* Goodknight, James Lincoln. American clergyman.

Gordon, Thomas Edward. English general. Died March 23; born, 1832.

Goss, Frederick Llewellyn. American inventor. Died November 10; born, 1847.

Gott, John. American inventor. Died March 11; born, 1839.

Grant, William A. American manufacturer. Died March 20; born, 1847.

* Green, Joseph Reynolds. British botanist and physiologist.

* Greene, Richard Gleason. American editor and clergyman.

Grenelle, Levi Osborn. American Baptist clergyman. Died June 18; born, 1821.

* Griffiths, John Lewis. American diplomat.

* Griswold, Putnam. American operatic singer.

Gross, Peter A. American artist. Died January 24; born, 1849.

* Gruening, Emil. American clergyman.

* Grundy, Sydney. English playwright.

Hackstaff, Priscilla Dudley. American woman suffrage advocate. Died January 15; born, 1852.

* Haggin, James Ben Ali. American capitalist and sportsman.

* Hall, Charles Badger. American soldier.

* Hall, Edward Julius. American telephone official.

* Hall, Richard Nicklin. English archæologist.

Hamilton, Charles K. American aviator. Died January 22; born, 1886.

* Hamilton, William Reeve. American army officer and writer.

Hanshew, Thomas W. American actor and novelist. Died March 3; born, 1857.

Harburger, Julius. American public official. Died November 9; born, 1851.

* Harjes, John H. American financier.

* Harper, Robert Francis. American Assyriologist.

Harriott, Frederick C. American theatrical manager, husband of Clara Morris. Died May 29; born, 1840.

Haruko, Dowager Empress of Japan. Died April 9; born, 1850.

* Hawkins, John Parker. American soldier.

Head, Barclay Vincent. English numismatist. Died June 18; born, 1844.

* Hegar, Alfred. German gynecologist.

* Heaton, Sir John Henniker. English public official.

* Heinze, Fritz Augustus. American capitalist.

* Henson, Poindexter Smith. American clergyman and writer.

* Herkomer, Sir Hubert von. English artist.

* Heroult, Paul. French metallurgist.

* Heyse, Paul Johann Ludwig von. German poet.

* Hill, George William. American agriculturist.

* Hill, George William. American astronomer.

* Hill, Sir John Edward Gray. English authority on Maritime Law.

* Hirschfeld, Robert. American composer and musical director.

* Hiscock, Frank. United States Senator.

* Holden, Edward Singleton. American astronomer and educator.

* Holland, John Philip. American inventor.

Holmes, Alice. American poet, "the blind poetess." Died January 18; born, 1822.

* Home, Sir Anthony Dickson. English physician and surgeon.

* Hooper, Franklin William. American institute director.

* Hope-Jones, Robert. American organ builder.

* Hornblower, William Butler. American jurist.

* Horne, Charles Silvester. English Congregational clergyman.

Horton, James Madison. American merchant. Died June 26; born, 1835.

* Houston, Edward James. American electrical engineer and writer.

* Hovey, Horace Carter. American clergyman and scientist.

Hubbard, John F. American naval officer. Died January 10; born, 1867.

Hutchins, Frank Avery. Died January 25; born, 1852.

* Hyatt, Stanley Portal. English novelist and engineer.

Ibsen, Susanna (Thoresen). Widow of Henrik Ibsen. Died April 13; born, 1837.

Illingworth, Benjamin. American pioneer in steel manufacturing. Died February 28; born, 1828.

* Ingalls, Melville Ezra. American railway official and financier.

* Irving, Lawrence Sydney Brodribb. English actor and playwright.

* Irwin, Agnes. American educator.

* Isham, Samuel. American artist and art critic.

* Ito, Yuko, Count. Japanese admiral.

* Ives, Brayton. American banker and soldier.

* Jaffray, Robert. Canadian legislator and capitalist.

* Jansen, Marie. American singer.

* Jaurès, Jean Léon. French Socialist public official.

Jerningham, Sir Hubert Edward Henry. English administrator. Died April 3; born, 1842.

* Jessopp, Augustus. English clergyman and writer.

* Jodl, Friedrich. German philosopher and educator.

* Johnson, Jeremiah Augustus. American lawyer and public official.

* Johnston, Christopher. American scholar and educator.

Jones, Francis Wiley. American electrical engineer and inventor. Died March 30; born, 1847.

Jones, Inigo Richmond. English major-general. Died July 20; born, 1848.

* Jones, Thomas Goode. American jurist.

* Jones, William Albert. American soldier.

* Jordan, Chester Bradley. American public official.

* Joyce, Patrick Weston. American public official.

* Judson, Edward. American Baptist clergyman.

Katschthaler, Johann. Austrian Roman Catholic cardinal, Bishop of Salzburg and Primate of Germany. Died February 27; born, 1832.

* Kean, John. American public official.

* Keddie, Henrietta. Scottish novelist.

* Kekewich, Robert George. English soldier.

* Kellogg, Amos Markham. American editor and educator.

* Kellogg, Edgar Romeyn. American soldier.

* Kelly-Kenny, Sir Thomas. English soldier.

Kennedy, John J. State Treasurer of New York. Died February 15; born, 1856.

Kennedy, John M. American jurist. Died June 18; born, 1838.

Kenyon, Charles. English comedian. Died January 3; born, 1860.

* Khuen-Belasi-Hedervary, Karoly (Charles), Count. Hungarian statesman.

* King, Albert Freeman Africanus. American physician.

* Kingsbury, Oliver Addison. American Presbyterian clergyman.

* Knutsford, Henry Thurston Holland, first Viscount. English politician.

Koopman, Augustus. American artist. Died February 1; born, 1869.

* Kopp, Georg. German Roman Catholic Cardinal.

* Kossuth, Francis. Hungarian statesman.

Krantz, Jules François Emile. American vice-admiral. Died February 26; born, 1822.

* Laking, Sir Francis Henry. English physician.

Lamb, John Edward. Former Congressman from Indiana. Died August 23; born, 1852.

Lane, Gardiner Martin. American banker and art patron. Died October 3; born, 1860.

Langeloth, Jacob. American capitalist. Died August 14; born, 1852.

Lankford, Richard Dixie. American railway official. Died January 15; born, 1867.

Lee, Francis Basley. American historian and penologist. Died May 2; born, 1869.

Lee, Robert E., Captain. Last surviving son of General Robert E. Lee. Died October 20; born, 1843.

* Le Fevre, Egbert. American physician and educator.

Leggat, Andrew R. American bookseller. Died March 7; born, 1831.

* Lemaître, François Jules. French dramatic critic.

* Leslie, Mrs. Frank (Baroness de Bazus). American publisher.

* Lewis, Alfred Henry. American writer.

Lilley, Robert. American Oriental scholar. Died October 30; born, 1839.

* Lindsay, Thomas M. Scottish clergyman.

Livingston, Luther S. American bibliophile and writer. Died December 24; born, 1866.

* Lockwood, Wilton. American portrait and flower painter.

Logue, Daniel C. Last survivor of the crew of the *Monitor*. Died February 14; born, 1832.

* Lucas, Reginald Jeffrey. English writer.

Lummis, William. American financier. Died March 15; born, 1841.

* Lurton, Horace Harmon. Associate Justice of the United States Supreme Court.

* Lydecker, Garrett J. American soldier and engineer.

* Lyon, George Armstrong. American naval officer.

McCardell, Thomas F. American editor and writer. Died March 19; born, 1840.

* McCaskey, William Spencer. American soldier.

* McClung, Lee. American public official.

* McCutcheon, James. American merchant.

* MacDougall, Clinton Dugald. American soldier.

* McIntyre, Robert. American bishop.

* McLeary, James Harvey. American jurist.

* Macnab, Angus. British ophthalmologist.

* Magruder, George Lloyd. American physician.

* Mahan, Alfred Thayer. American naval officer.

Mahmud, Ekrem Bey Redjaizade. Turkish poet, educator, and reformer. Died January 31.

* Marks, William Dennis. American engineer and writer.

Marston, Edward. English publisher. Died April 6; born, 1825.

* Martin, Frederick Townsend. American financier and writer.

Mason, Joseph. Former member of Congress from New York. Died June 1; born, 1828.

Massey, William A. Former United States Senator. Died March 5; born, 1857.

* Mattei, Tito. Italian composer, educator, and pianist.

* Mayo, John C. Calhoun. American capitalist and politician.

Mayo, Mrs. John R. (Isabella Fyvie). English novelist. Died May 13; born, 1843.

* Meek, Seth Eugene. American zoölogist.

Melford, Mark. English playwright and actor. Died January 4.

Mengelberg, William. Dutch musician and educator. Died October 2; born, 1871.

Mercalli, Giuseppe. Italian seismologist. Died March 19; born, 1850.

* Merriam, George Spring. American author and editor.

* Merritt, Edwin A., Jr. American public official.

Mestchersky, Prince Vladimir Petrovitsch. Russian novelist and editor. Died July 23; born, 1845.

* Milbank, Joseph. American banker and philanthropist.

* Miller, Darius. American railway official.

Mills, George F. American educator and agricultural expert. Died October 27; born, 1840.

Milne, William J. American educator. Died September 4; born, 1833.

* Minot, Charles Sedgwick. American anatomist and educator.

* Minto, Gilbert John Murray Kynynmond Elliot, fourth Earl of. English nobleman.

* Mistral, Frédéric. French poet.

* Mitchell, Silas Weir. American neurologist, novelist, and poet.

* Mogulesko, Zigmund. Jewish comedian.

Monk, Frederick D. Canadian public official. Died May 15; born, 1856.

Morales, Charles F. Former President of Santo Domingo. Died March 2.

Mostyn, Sir Savage Lloyd. English major general. Died June 20; born, 1835.

* Muir, John. American naturalist and writer.

* Mumford, James Gregory. American physician and surgeon.

* Mun, Adrien Albert Marie, Count de. French scholar and public official.

* Murray, Sir John. British oceanographer.

Mustapha Fahmy Pasha. Egyptian statesman. Died September.

* Myer, Albert Lee. American soldier.

* Newton, Richard Heber. American clergyman and lecturer.

Nichols, James E. American merchant. Died July 21; born, 1845.

* Niles, William Woodruff. American Bishop of the Protestant Episcopal Church.

* Nisbet, John. British forester.

* Nixon, Sir Christopher John. Irish physician and educator.

* Nordica, Lillian (Lillian Norton Young). American prima donna.

Norris, John. American publisher. Died March 21; born, 1857.

* O'Brien, Peter, first Baron. Irish jurist.

O'Malley, Joseph. American physician and writer on medical subjects. Died March 8; born, 1865.

O'Neill, John. American musician and critic. Died February 9; born, 1830.

* Orr, Alexander Ector. American financier and philanthropist.

Osborn, Francis A. American soldier and banker. Died March 11; born, 1834.

Pangborn, Major Joseph P. American authority on transportation methods. Died August 15; born, 1844.

* Park, Roswell. American surgeon.

Parker, James. American naval officer and authority on admiralty law. Died March 23; born, 1832.

Parton, Arthur. American landscape artist. Died March 7; born, 1842.

Patmore, William Beverly. American Methodist Episcopal clergyman and editor. Died July 5; born, 1844.

* Payne, Sereno Elisha. American legislator.

Peabody, George Livingston. American physician. Died October 31; born, 1850.

* Peck, Harry Thurston. American scholar.

* Peguy, Charles Pierre. French writer.

* Peirce, Benjamin Osgood. American physicist and educator.

* Perkins, George Douglas. American editor.

* Perry, James Hillhouse. American naval officer.

* Picquart, Marie Georges. French soldier and public official.

* Pierce, Arthur Henry. American psychologist.

Pierce, Charles Santiago Sanders. American philosopher and mathematician. Died April 20; born, 1840.

* Pietro, Angelo di. Italian Cardinal.

* Pius X (Giuseppe Melchiore Sarto), Pope.

* Plançon, Pol Henri. French operatic basso.

Post, Alfred Seton. American naval officer. Died April 6; born, 1845.

* Post, Charles William. American manufacturer and publicist.

* Potter, Frances Boardman (Squire). American educator and suffrage leader.

* Potter, William Bleecker. American mining engineer.

Powell, Sir Francis. English artist. Died October; born, 1833.

Price, Vincent C. American chemist; inventor of baking powder. Died July 15; born, 1832.

* Pugno, Raoul. French pianist.

* Quales, Niles Theodore. American physician.

* Raisuli, Mulai Ahmed ben Mohammed. Moroccan chieftain and bandit.

* Rankin, Arthur M'Kee. American actor.

* Ramsay, Francis Munroe. Rear admiral (retired) of the United States navy.

Raub, Michael W. American naturalist. Died August 8; born, 1836.

Rayner, Sir Thomas Crossley. Chief Justice of British Guiana. Died May 22; born, 1860.

* Reclus, Paul. French surgeon.

Reed, Mrs. Sylvanus Gallup. American educator. Died November 17; born, 1832.

* Revoil, Paul. French diplomat.

* Reyburn, John Edgar. American public official.

* Reymond, Emile. French surgeon, aviator, and senator.

* Richard, Ernst D. American lecturer and peace advocate.

* Richardson, James Daniel. Former Congressman from Tennessee.

* Richardson, Rufus Byam. American archæologist and educator.

* Richardson, William. Representative in Congress from Alabama.

* Riis, Jacob Augustus. American civic reformer and journalist.

Rios, Eugenio Montero. Spanish statesman. Died May 12; born, 1832.

* Roberts, Earl (Frederick Sleigh Roberts, first Earl of Kandahar, Pretoria, and Waterford). English soldier.

* Robeson, Henry Bellows. Rear admiral (retired) of the United States navy.

* Rockhill, William Woodville. American diplomat.

Rohan, Alain Charles Louis, Duc de. French nobleman. Died January 6; born, 1845.

* Rojas, Pedro Ezequiel. Venezuelan diplomat, minister to the United States.

Rosenbusch, Karl Heinrich Ferdinand. German mineralogist. Born, 1836.

Rosenweig, Gerson. Jewish writer. Died February 14; born, 1862.

* Rotch, Thomas Morgan. American physician and educator.

Roujon, Henry François Joseph. Permanent secretary of the French Academy of Fine Arts. Died June 1; born, 1853.

Russell, James. American comedian. Died January 31; born, 1864.

Rutan, Charles Hercules. American architect. Born, 1851.

* Ryan, Thomas. American diplomat.

Sales, Pierre de. French writer. Died April 9; born, 1854.

Salinas, Antonino. Italian archæologist. Died March; born, 1841.

* San Giuliano, Marquis di. Italian statesman.

Saunders, William. Canadian entomologist. Died September 13; born, 1836.

Sawyer, James Estcourt. American soldier. Died May 29; born, 1846.

* Scadding, Charles. American Protestant Episcopal Bishop of Oregon.

* Scarborough, John. American Bishop of the Protestant Episcopal Church.

Schenk, Carl Alvin. American forester. Born, 1868.

* Schuch, Ernst von. German operatic conductor.

* Schuyler, Montgomery. American art critic and journalist.

Sears, Richard W. American merchant. Died September 28; born, 1863.

Séché, Léon. French writer. Died May 4; born, 1858.

Seidl, Gabriel von. German architect. Born, 1848.

* Sgambati, Giovanni. Italian pianist.

* Shallenberger, William Shadrach. Former member of Congress from Pennsylvania.

* Shelby, David Davie. American jurist.

* Sheldon, Andrew Flint. American physician and soldier.

* Sherman, Samuel Sterling. American educator.

Shields, John A. American public official. Died July 7; born, 1839.

* Sickles, Daniel Edgar. American soldier.

Simpson, John. American soldier. Died October 30; born, 1840.

* Simpson, William Kelly. American laryngologist and otologist.

Sinclair, Henry Harbinson. American hydroelectric engineer. Died August 31; born, 1858.

* Sion, Alix Marie Adelaide de. French actress.

Smith, Augustus. Oldest graduate of Yale University. Died July 27; born, 1815.

* Smith, Charles William. American Methodist Episcopal bishop.

* Smith, John Butler. American public official, former Governor of New Hampshire.

* Smith, Joseph. President of the Reorganized Church of the Latter Day Saints.

* Smith, Sir William Alexander. Scotch philanthropist.

Snyder, John. American Unitarian clergyman and author. Died August 12; born, 1842.

* Spitzka, Edward Charles. American neurologist.

* Steele, Daniel. American clergyman, educator, and author.

* Sterrett, John Robert Sitlington. American scholar and educator.

Steuart, John C. American railway official. Died March 4; born, 1861.

* Stevens, Lillian M. N. American temperance advocate.

* Stevenson, Adlai Ewing. Former Vice-President of the United States.

* Stevenson, Fannie (Van de Grift) Osbourne (Mrs. Robert Louis Stevenson). American writer and artist.

Stockton, Louise. American writer and social worker. Died June 13; born, 1839.

Stokes, Robert Henry Simpson. English vice admiral. Died April 24; born, 1855.

* Storer, Francis Humphreys. American chemist and educator.

* Strong, Elnathan Ellsworth. American clergyman of the Congregational Church.

* Strout, Sewell Cushing. American jurist.

* Stubbs, Joseph Edward. American clergyman and educator.

Suess, Edward. Austrian geologist and seismologist. Died April; born, 1831.

* Sullivan, James Edward. American athlete, official, and publisher.

* Suttner, Baroness Bertha von. Austrian peace advocate and writer.

* Swan, Sir Joseph Wilson. English inventor.

Swift, Samuel. American music and art critic. Died July 21; born, 1873.

Swinburne, Sir John. English naval officer. Died July 15; born, 1831.

* Teller, Henry Moore. American public official formerly United States Senator from Colorado.

* Tenniel, Sir John. English cartoonist.

* Thomas, Brandon. English playwright and actor.

* Thomson, James William. Rear admiral (retired) of the United States navy.

Ticknor, Benjamin Holt. American publisher. Died January 17; born, 1843.

* Tieghem, Philippe van. French botanist.

* Tombo, Rudolf, Jr. American scholar and educator.

* Torney, Henry. American surgeon.

* Townesend, Stephen. English surgeon and author.

* Tucker, Alfred Robert. Formerly Bishop of Uganda.

* Tyrrell, Robert Yelverton. Irish educator and literary critic.

* Upton, Winslow. American astronomer and educator.

Uriburu, José Evaristo. Former Acting President of Argentina. Died October 25.

* Vanderbilt, George Washington. American capitalist and scholar.

Vaudremer, Emile. French architect. Died February 6; born, 1829.

* Villiers, John Henry, Baron de. Chief Justice of the Union of South Africa.

* Visconti-Venosta, Emilio, Marquis. Italian statesman and diplomat.

* Voelkers, Karl. German ophthalmologist.

Volkmar, Charles. American art potter. Died February 6.

* Voorhees, Willard Penfield. American jurist.

* Vroom, Garret Dorset Wall. American jurist.

Wagner, Clinton. American throat specialist. Died November 25; born, 1839.

* Wagner, Louis. American banker and soldier.

* Wainwright, Charles S. American physician.

* Walden, John Morgan. American Methodist Episcopal Bishop.

Walker, Henry. American soldier and public official. Died December 20; born, 1835.

Wallace, Rush Richard. American naval officer. Died June 12; born, 1835.

* Warman, Cy. American poet and writer.

* Washburn, Francis. American clergyman and writer.

* Watson, Eugene Winslow. American naval officer.

Weightman, Richard Coxe. American writer. Died February 17; born, 1845.

Welles, Edgar Thaddeus. American capitalist. Died August 22; born, 1843.

* Welsh, Charles. American author and literary critic.

* Wemyss, Francis Charteris, tenth Earl of. English nobleman.

* Wernz, Francis Xavier. Twenty-ninth General of the Society of Jesus.

* West, William Stanley. American public official.

* Westinghouse, George. American inventor and financier.

* Weyerhaeuser, Frederick. American lumberman and capitalist.

* Whistler, Garland Nelson. American soldier.

* Whitney, Sir James Pliny. Canadian statesman.

Whittaker, Thomas. American publisher. Died December 26; born, 1832.

Whyte, Sir William. German statesman and railway official. Died April 14; born, 1844.

* Wilbour, Charlotte Beebe. American woman suffrage leader.

* Wilbur, Henry W. American editor and author.

Wilkinson, Thomas Edward. Church of England Bishop. Died October 28; born, 1837.

* Willard, Charles Andrew. American jurist.

* Williams, Job. American educator.

* Williams, Morgan Bransby. English engineer and railway builder.

* Wilson, Ellen Louise (Axson). Wife of President Woodrow Wilson.

* Wilson, James Grant. American soldier and writer.

Wimborne, Ivor Berie Guest, first Baron. English nobleman and capitalist. Died February 22; born, 1835.

* Winchell, Newton Horace. American geologist.

Winslow, Edward. American soldier and engineer. Died October 24; born, 1837.

* Winslow, Herbert. American naval officer.

Wolffsohn, David. President of the Zionist organization. Died September 15.

* Woodbury, John McGaw. American physician and public official.

Woodward, Horace Bolingbroke. British geologist. Born, 1848.

Wormser, Isidor. American financier. Died June 24.

* Wright, Marie (Robinson). American author.

* Young, James Scott. American jurist.

Zimmerman, Eugene. American capitalist. Died December 20; born, 1845.

NEGRI SEMBILAN, THE (Nine States). A federation of states composing a state of the Federated Malay States protectorate (q.v.).

The native Malay population numbers 71,350, and is mainly agricultural. They inhabit the Kuala Pilah and Tampin districts, and cultivate rice, etc., for their own use. The cultivation of coffee has been replaced by that of rubber. Area under rubber in 1912, 88,082 acres; rice, 28,000; coconuts, 20,595. The state forests contain valuable timber. The chief rivers are the Muar and the Linggi. The Chinese own and exploit the alluvial tin fields; the more extensive workings are capitalized by Europeans. The land alienated for mining in 1912 covered 26,188 acres. Seremban is the capital; other towns are Port Dickson, Kuala Klawang, Kuala Pilah, and Tampin. The capital is connected with Port Dickson by rail. The F. M. S. Railway passes through the state by way of Seremban and Tampin. There are 397 miles of metaled, and 24 unmetaled wagon roads, besides 246 miles of bypaths. The native rulers are Tungku Mohammed, Yang di Pertuan of Sri Menanti, and dominant chiefs. The British resident in 1914 was A. H. Lemon.

NEOSALVARSAN. See SALVARSAN.

NETHERLANDS, THE (or HOLLAND, KINGDOM OF). A constitutional monarchy of western Europe, lying between Germany and the North Sea. The Hague is the capital.

AREA AND POPULATION. The total area, including the rivers of Zeeland and South Holland, the Zuider Zee, the Dollart, and the Wadden (the shallow extending along the shores of Friesland and Groningen as far as the Dollart), based on a low-tide planimetric calculation, is 40,828.71 square kilometers (15,764 square miles). The land area by provinces, the population according to the census of Dec. 31, 1889, together with the population as calculated Dec. 31, 1912, and the density per square kilometer in 1912, are given in the table below.

	Sq. km.	*1889*	*1912*	*D.*
North Brabant	4,972.84	509,628	649,806	127
Gelderland	5,024.40	512,202	662,260	130
South Holland	2,981.00	949,641	1,471,761	489
North Holland	2,762.01	829,489	1,156,162	414
Zeeland	1,881.75	199,284	236,149	132
Utrecht	1,383.21	221,007	298,367	216
Friesland	3,220.25	335,558	366,305	111
Overijssel	3,354.50	295,445	397,341	119
Groningen	2,283.52	272,786	336,741	148
Drenthe	2,662.09	130,704	181,501	68
Limburg	2,194.68	255,721	358,409	163
Total	32,600.25 *	4,511,415	6,114,302	185

* 12,587 square miles.

Of the total population in 1912, 3,030,505 were males, and 3,083,797 were females. The total population in 1909 was 5,858,175. Of these, 5,788,193 were Dutch, 37,534 German, 18,338 Belgians, etc. The majority of the population are Protestants. There were 46,163 marriages in 1912 (43,248 in 1911); 170,269 living births (166,527); stillbirths, 6640 (6638); deaths, 74,647 (86,782). The emigrants numbered, in 1912, 2155 (of whom 1150 adult males, 504 adult females); in 1911, 2638 (of whom 1426 adult males, 604 adult females). A few of the great cities (communal population as calculated Dec. 31, 1912) follow: Amsterdam, 587,876; Rotterdam, 446,897; The Hague, 294,693; Utrecht, 122,853; Groningen, 78,276; Haarlem, 70,491; Arnhem, 64,823; Leiden, 59,207; Nimeguen, 58,390; Tilburg, 53,498; Dordrecht, 48,295; Maastricht, 38,611; Apeldoorn, 38,475; Leeuwarden, 37,897; Bois-le-Duc, 36,029; Enschede, 35,495; Delft, 34,634; Schiedam, 33,882; Zwolle, 33,712; Hilversum, 32,938; Emmen, 31,076; Deventer, 28,627; Breda, 27,512.

EDUCATION. The Dutch system of education is peculiar in that the State encourages and subsidizes private primary instruction in preference to maintaining public schools, though these are provided by local taxation in the districts where other schools are inadequate. Primary instruction is compulsory between the ages of 7 and 13. The average attendance is 95 per cent. Secondary instruction is not free. There are excellent special schools. The total number of private schools at the end of 1911 was 5434. with 31,221 teachers, and 932,754 pupils, of whom 479,684 were boys. The University of Leiden had 1196 students in 1911–12: Utrecht, 1095; Groningen, 579; Amsterdam, 1134; the free university, 176.

PRODUCTION. In 1912 the productive area was divided as follows: 877,157 hectares in arable lands, 1,216,059 hectares in pasture, 49,991 in gardens, roots, truck crops, etc., 30,338 in orchards and nurseries, 260,141 in forests—a total of 2,433,686 hectares. In the table below are shown area in hectares and production in quintals of great crops in 1912–13 and 1913–14, with yield per hectare in 1912–13; figures for 1913–14 are subject to slight revision.

	Hectares		*Quintals*		*Qs.*
	1912	*1913*	*1913*	*1914*	*ha*
Wheat	57,147	58,567	1,382,916	1,464,175	24.2
Rye	228,194	226,673	4,227,168	3,717,437	18.5
Barley	26,883	21,201	679,478	698,879	25.3
Oats	140,728	139,945	3,065,186	2,896,861	21.8
Flax *	14,650	8,193	75,328	....	5.1
Beets **	60,300	61,911	16,658,400	....	276.2
Potatoes	170,000	168,385	25,026,947	....	147.2

* Fibre production.
** Sugar beets.

There were in the country June, 1913, 334,445 horses, 2,096,599 cattle, 842,018 sheep, 232,478 goats, 1,350,204 swine, 7,182,287 fowls, and 69,707 beehives.

There are grown for export great quantities of bulbs, shrubs, trees, vegetables, and fruits; bulbs, shrubs, and trees exported in 1911 were valued at 15,156,141 guilders, vegetables 56,700,000, fruits 2,546,000.

From the state coal mines (mostly in Limburg), 1,725,394 metric tons were produced in 1912, valued at 12,044,500 guilders. The North Sea fisheries products (herring) were valued at 10,763,841 guilders in 1912; oysters, 2,937,832 kilos. There were reported in 1912, 418 distilleries, 11 sugar refineries, 27 beet-sugar refineries, 33 salt works, 427 breweries, and 64 vinegar factories.

COMMERCE. The Netherlands is practically a free trade country. The few duties levied have rather a fiscal than a protective object. The total imports for consumption and exports of domestic produce are seen below for three years (precious metals included), in guilders (1 guilder = 40.2 cents):

	1910	*1911*	*1912*
Imports	3,265,200,000	3,388,200,000	3,613,000,000
Exports	2,632,800,000	2,782,300,000	3,113,100,000

In the following table are given the principal articles of the special trade for two comparative years, with values in thousands of guilders:

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
Iron and steel	422,484	311,734	296,040	238,849
Textiles	126,788	199,866	128,199	161,343
Cereals & flour	573,680	518,771	357,409	383,300
Coal	118,560	125,888	47,430	52,260
Rice	100,457	99,576	64,879	60,229

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
Mineral oil	15,088	18,874	216	218
Coffee	57,784	51,150	89,099	86,088
Butter	2,789	2,108	80,170	89,149
Margarine	28,218	19,522	48,718	59,885
Sugar	84,908	82,980	76,166	85,528
Cheese	98	816	18,063	20,814
Gold and silver .	17,458	45,628	19,888	18,256
Wood	107,888	126,847	67,571	65,814
Skins	48,070	58,463	52,225	45,986
Indigo	10,858	18,159	5,628	7,728
Copper	194,277	169,860	174,508	151,608
Paper	9,819	10,678	80,782	86,801
Fats	16,187	20,627	7,987	18,816
Saltpeter	780	1,854	1,188	2,647
Zinc	22,882	25,608	21,442	24,628
Tobacco	18,814	18,506	11,851	12,276
Tin	49,191	27,749	35,147	26,060
Dyes	26,654	29,059	28,881	22,488
Oil seeds	42,510	48,804	28,269	28,828

The principal countries of origin and destination follow with the value of their trade in thousands of guilders: Germany, imports 973,700, and exports 1,454,800; Dutch East Indies, 495,900 and 154,300; United States, 362,000 and 135,500; Great Britain, 354,400 and 604,700; Belgium, 343,600 and 370,800; Russia, 291,800 and 25,100; British India, 87,400, imports; Hamburg, 66,500 and 55,900; France, 30,700 and 25,100; Italy, 23,500, exports.

Vessels entered in the 1912 trade, 17,000, of 17,367,594 tons; cleared, 17,150, of 17,267,058 tons. The merchant marine in 1912 included 1413 sailing vessels, of 40,636 tons, and 367 steamers, of 576,678 tons.

Communications. There were in operation Jan. 1, 1913, 3256 kilometers of railways, all operated by private companies. State telegraph lines, 7738 kilometers; wires, 38,242 kilometers; stations, 1553 (of which, 1166 state). Urban telephone wires, 204,973 kilometers; interurban, 77,418. Post offices, 1525.

Finance. The monetary unit is the guilder, worth 40.2 cents. In the table below are shown revenue, including extraordinary, and expenditure for three successive years, in guilders:

	1910	*1911*	*1912*
Rev.	200,092,824	205,602,748	212,887,754
Expend.	208,947,097	209,949,466	226,218,873

The budget for 1913 returned 209,531,459 guilders revenue and 231,219,968 guilders expenditure. The 1914 budget estimated the revenue at 228,415,617 guilders (62,340,000 excise, 30,860,000 indirect taxes, 18,475,000 posts, 16,680,000 import duties, 15,615,000 land tax, 12,975,000 personal tax, 12,140,000 income tax, 10,600,000 tax on capital, 1,379,000 domains, etc.); and the expenditure at 253,345,818 (43,629,556 public works, 41,458,135 interior, 39,449,016 finance, 38,593,113 debt, 34,965,377 war, 20,847,769 marine, 16,733,752 agriculture, etc., 11,757,929 justice, 2,701,273 colonies, etc.).

The nominal capital of the funded debt stood (1914) at 1,148,379,900 guilders. Annual interest on funded debt, 31,783,704 guilders; floating debt, 600,000; annuities, 62,909; sinking fund, 6,121,500.

Army. The army of the Netherlands is a national militia in which every citizen is liable for service without substitution. Six years is spent in the active militia, five years in the landwehr, and then up to the age of 40 in the landsturm. The recruits for the militia, which is maintained at about 22,000 men on a peace basis, are obtained by lot and they serve for a training period of from 8½ to 24 months, depending upon the time of year and the arm of the service. Permanent cadres are maintained and the law provides an annual contingent of 23,000 men, who are embodied in the various organizations as required. Normally the field army is organized into four divisions, each of which could be immediately filled to a strength of about 19,000, and could be duplicated upon mobilization. On a war basis the military strength of the Netherlands is estimated at about 200,000 men. During the year a larger force than usual was under arms in view of the European War, and the possibility of attempts to violate the neutrality of the kingdom.

Navy. The Netherlands fleet is engaged in the protection both of Dutch waters and coasts, and of the East Indian possessions. The East Indian possessions contribute to the maintenance of the fleet. Four destroyers built at Flushing, two completed in 1911, and two in 1912, were for the East India service; their displacement is 515 tons, speed 30 knots, range 6200 miles. The 4 under construction in 1914 are also for the East India service. They will displace 480 tons, and have a speed of 30 knots. Eight torpedo boats building, authorized in 1913, will displace 200 tons, and have a speed of 26 knots. Three gunboats building will displace 540 tons, and have a speed of 16 knots. Four submarines are building, 2 of which, of 350 tons submerged displacement, are for the East India service, and 2, of 200 tons submerged displacement, are for home waters. In their report of July, 1913, the commission of naval defense recommended the construction of 9 dreadnoughts, of 21,000 tons, 6 torpedo cruisers, of 1200, 8 destroyers, 44 torpedo boats, and 22 submarines.

The effective fleet at the end of 1913 included 9 armored and 6 protected cruisers, of 66,430 aggregate tons; 4 mine-layers, of 1880 tons; 38 torpedo boats, 4 torpedo boat destroyers, and 5 submarines.

Government. The executive authority is vested exclusively in the sovereign acting through a responsible ministry; the legislative power devolves upon the states-general, divided into the upper or first chamber of 50 members, and the second chamber of 100 deputies directly elected. The reigning sovereign in 1914 was Wilhelmina, born Aug. 31, 1880; succeeded under the regency of her mother Nov. 23, 1890; attained her majority Aug. 31, 1898; married Duke Henry of Mecklenburg-Schwerin Jan. 7, 1901. Heiress-apparent, Princess Juliana Louisa Emma Maria Wilhelmina, born April 30, 1909.

The cabinet since August, 1913, is as follows: foreign affairs, Dr. Jkhr J. Loudon; interior, Dr. P. W. A. Cort van der Linden; justice, Dr. B. Ort; navy, Capt. J. J. Rambonnet; finance, Dr. M. W. L. Treub; war, Col. N. Bosboom; public works, Dr. C. Lely; agriculture, etc., F. E. Posthuma; and colonial, Dr. Th. B. Pleyte.

History. On January 30 the Dutch submarine No. 5 sank at Flushing, with the loss of one man. In June the government asked parliament to approve the construction of three dreadnoughts of 24,000 tons each, in addition to a number of cruisers and torpedo boats, for the defense of the Dutch East Indies. The outbreak of the War of the Nations and the German invasion of Belgium made it seem advisable for the Dutch government to mobilize its army, and to establish border patrols for the maintenance of strict neutrality. To defray the mobilization charges six of the richest men in the Netherlands offered to contribute one-tenth of their fortune. So heavy was the burden of maintaining the army on a war footing, that in December a loan of $100,000,000 was floated. In regard to the measures taken to prevent the reshipment of food from the Netherlands to Germany, consult the article on the WAR OF THE NATIONS. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties.*

NEURASTHENIA. See OCCUPATIONAL DISEASES.

NEUTRALITY. See UNITED STATES, section *Administration.*

NEVADA. POPULATION. The estimated population on July 1, 1914, was 98,726. The population in 1910 was 81,875.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Wheat	1914	45,000	1,832,000	1,266,000
	1913	89,000	1,081,000	887,000
Oats	1914	18,000	676,000	372,000
	1913	11,000	473,000	307,000
Barley	1914	18,000	611,000	397,000
	1913	12,000	492,000	443,000
Potatoes	1914	12,000	1,560,000	1,092,000
	1913	11,000	1,760,000	1,197,000
Hay	1914	247,000	*a* 803,000	6,665,000
	1913	285,000	646,000	7,106,000

a Tons.

MINERAL PRODUCTION. Nevada is essentially a metal-producing State, metallic products constituting more than 98 per cent of the total value of the State's mineral output. Though Nevada is at present of much less relative importance as a mining State than it was in the days of the famous Comstock lode, it continues to rank first in the production of silver, which is third among its mineral products. The most important product of the State is copper, in the production of which it ranks fifth. The production of copper was 90,693,751 pounds in 1913, compared with 86,477,494 pounds in 1912. There was a decline in value, however, from $14,468,787 in 1912, to $14,057,531 in 1913. Copper mining is one of the new industries of the State. It did not begin on an important scale until 1908, with the development of the Ely district in White Pine County. The output of gold in the State decreased from 650,943 fine ounces, valued at $13,456,880 in 1912, to 570,589 fine ounces, valued at $11,795,130 in 1913. The production of silver increased from 14,369,063 ounces, valued at $8,836,974 in 1912, to 16,090,083 fine ounces, valued at $9,718,410 in 1913. The lead output of the State decreased from 19,500,100 pounds in 1912, to about 15,300,000 pounds in 1913, or about 21 per cent. The output of recoverable spelter from zinc ores sold or treated increased from 13,322,988 pounds in 1912, to 15,137,000 pounds in 1913. The metal output of the State in 1914 decreased over 22 per cent, according to the estimates of the United States Geological Survey. This was due chiefly to the influence of the European War in lowering the price of the baser metals, especially copper. The estimate for 1914 was $28,800,000, compared with about $37,000,000 in 1913. Gold decreased about 4 per cent, silver about 5 per cent, copper over 30,000,000 pounds, and lead nearly 16 per cent. The production of zinc ores decreased nearly 10 per cent. The total value of the mineral products of the State in 1913 amounted to $37,842,084, compared with $39,111,828 in 1912.

FINANCE. There was a balance in the treasury on Jan. 1, 1914, of $449,404. The receipts for the year amounted to $881,538, and the disbursements to $1,073,114, leaving a balance on hand on Dec. 3, 1914, of $257,828.

EDUCATION. The latest reports available for educational statistics are for 1911–12. The total number of school age in the State in 1912 was 12,695. The enrollment was 11,098, and the average daily attendance 8190. There were 529 teachers, receiving an average monthly salary of $87.57. The total amount expended for schools in that year was $625,562. There were 16 public high schools in the State.

TRANSPORTATION. The total railway mileage in the State in 1914 was 2416, compared with 2328 in 1913. The longest lines are the Central Pacific, 746 miles; the San Pedro, Los Angeles and Salt Lake Railroad, 267; and the Western Pacific Railway, 427. The Southern Pacific Company owns no mileage in Nevada, but operates the Central Pacific.

CHARITIES AND CORRECTIONS. The institutions under State control include the State Prison, the Nevada Hospital for Mental Diseases, and the Orphans' Home, all at Carson City, and the Nevada School of Industry at Elko. The latter is under construction at the present time. The Crittenden Home for Girls, located at Reno, is not under State control, but receives aid from the State.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for Governor, Senator, and representative to Congress. In the nominating elections the Democrats renominated F. G. Newlands for Senator, and nominated E. D. Boyle for Governor. The Republicans nominated S. Platt for Senator, and renominated T. L. Oddie for Governor. At the elections on November 3, Mr. Boyle, the Democratic candidate, was elected, with 9623 votes, compared with 8530 votes for Governor Oddie. The Socialists had a ticket in the field and cast 3391 votes for Governor. For United States Senator, Senator Newlands was reëlected with 8078 votes, compared with 8038 for the Republican candidate, and 5451 for the Socialist candidate. The Republicans elected the representative to Congress. An amendment providing for woman suffrage was adopted at this election. See WOMAN SUFFRAGE.

STATE GOVERNMENT. Governor, Tasker L. Oddie; Lieutenant-Governor, G. C. Ross; Secretary of State, George Brodigan; Treasurer, William McMillan; Comptroller, Jacob Eggers; Superintendent of Public Instruction, J. E. Bray; Attorney-General, Geo. B. Thatcher—all Democrats, except Oddie, Eggers, and McMillan, Republicans.

JUDICIARY. Supreme Court: Chief Justice, G. F. Talbot, Democrat; Justices, P. A. McCarran, Democrat; Frank H. Norcross, Republican; Clerk, Joe Josephs, Democrat.

State Legislature, 1913.

	Senate	*House*	*Joint Ballot*
Democrats	12	32	44
Republicans	8	19	27
Independent	1	1	2
Socialists	1	1	2
Democratic majority	2	11	13

The representatives in Congress will be found in the section *Congress*, article United States.

NEVADA, University of. A State institution of higher education, founded at Reno, Nev., in 1886. The total enrollment in all departments of the university in the autumn of 1914 was 340, and the faculty numbered 50. The most notable change in the faculty during the year was the appointment of A. W. Hendrick as president of the university to succeed Joseph David Stubbs; F. C. Lincoln was appointed new head of the Mining School, and F. W. Wilson new head of Animal Husbandry. The yearly income from all sources is about $200,000. The library contains 39,200 volumes.

NEW BRUNSWICK. A maritime province of the Dominion of Canada. Area, 27,985 square miles, with a population (1911) of 351,889. The capital is Fredericton, with (1911) 7208 inhabitants. The province is administered by a Lieutenant-Governor, appointed by the Governor-General of Canada, and acting through a responsible executive council. There is a unicameral Legislative Assembly of 46 members popularly elected for four years. The Lieutenant-Governor in 1914 was Josiah Wood, appointed March 6, 1912. Premier in 1914, G. J. Clarke. See Canada.

NEW CALEDONIA. A French Melanesian colony. Area, with Loyalty Island, 19,823 square kilometers, with 50,680 inhabitants. Of this total the Wallis Archipelago occupies 96 square kilometers, and contains 4500 inhabitants; Fortuna and Alofi, 159 square kilometers, with 15,000; Chesterfield Islands 0.8 square kilometers. Nouméa, with 6968 inhabitants, is the capital. There are 16 kilometers of railway. Imports 1912, 15,316,755 francs; exports, 13,934,715 francs. Vessels entered in the 1911 trade, 117, of 188,612 tons. The export of minerals in 1911 was valued at 7,351,000 francs. Debt, Jan. 1, 1912, 10,361,591 francs. The Governor in 1914 was M. Aug. Brunet.

NEWFOUNDLAND. An island colony of Great Britain on the northeast side of the gulf of St. Lawrence. It covers 42,734 square miles, and had, in 1911, 242,619 inhabitants—245,137 in 1912. Administratively attached to Newfoundland is a portion of the coast of Labrador, comprehended between Hudson Strait and Blanc Sablon, including the Hamilton basin. St. Johns, the capital, had 32,292 inhabitants in 1911. Fishing, agriculture, mining, and lumbering are the chief industries. The majority of the settlements are on or near the coast. Paper and pulp mills have been established at Grand Falls, and at Bishop's Falls. Copper, iron pyrites, asbestos, and hematite iron are worked. Cod is the chief export; about 300,000 quintals are consumed annually in the home market, and the export in 1911–12 was 1,388,178 quintals. Total imports 1911–12, $14,733,490 ($13,383,910 in 1910–11); exports, $13,874,809 ($11,975,747). The total customs revenue in 1911–12 was $3,142,491. Revenue 1911–12 $3,736,456 ($3,527,126 in 1910–11); expenditure, $3,524,653 ($3,354,747). Total tonnage entered and cleared, 2,194,103, of which 1,369,367 tons British. Total railway lines with branches, 638 miles. Branch lines are under construction to Trinity, Bonavista, Hearts' Content, Trepassey, Fortune Bay, and Bonne Bay—about 300 miles. There are 4225 miles of telegraphs. The Governor in 1914 was W. E. Davidson.

The Governor in his speech at the opening of the Legislative Assembly, on January 15, declared that the prosperity of the colony during the past year had been absolutely unprecedented. Measures of local interest—such as water supply, railway development, ferries, and whale fishing—occupied the legislative session. Early in April a bitter blizzard inflicted terrible losses upon the Newfoundland sealing fleet; 170 men of the *Newfoundland's* crew were swept away on ice floes, and of this number only 50 survivors were rescued; the *Southern Cross* was reported lost, with all hands. To relieve the misery of the bereaved families, public and private generosity contributed, and the Dominion of Canada gave $25,000 as a mark of its sympathy. Another storm early in June destroyed many fishing smacks, and exacted a toll of perhaps 100 lives. As Newfoundland's share of the burden of war, the government proposed to equip and maintain 500 soldiers with a salary of $1 a day, to serve in Europe throughout the war; and the proposal was ratified by the Legislature, which met in special session, September 2.

NEW GUINEA. The largest of the East Indian islands. See Dutch East Indies; German New Guinea; Papua.

NEW HAMPSHIRE. Population. The estimated population on July 1, 1914, was 438,662. The population in 1910 was 430,572.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	21,000	966,000	$ 792,000
	1913	22,000	814,000	659,000
Oats	1914	12,000	456,000	264,000
	1913	12,000	420,000	285,000
Potatoes	1914	17,000	2,703,000	1,622,000
	1913	17,000	2,074,000	1,721,000
Hay	1914	520,000	*a* 598,000	10,166,000
	1913	495,000	495,000	8,560,000
Tobacco	1914	100	*b* 177,000	32,000
	1913	100	165,000	30,000

a Tons.
b Pounds.

Mineral Production. New Hampshire, like the other New England States, depends chiefly upon its stone quarries for its inclusion in the list of mineral producers. In 1913, when the total value of products amounted to $2,218,925, quarries contributed two-thirds, or $1,482,771. The only stone quarried on a commercial scale is granite, which is used chiefly for building and monumental purposes. The clay products are second in importance. The less important mineral products are fluorspar, garnet, occasional gems, mica, mineral waters, sand and gravel, scythestones, and a small quantity of zinc. The total value of the mineral products in 1913 was $2,218,925, compared with $1,949,876 in 1912.

Transportation. The total railway mileage of the State in 1914 was about 1260 miles.

There was practically no construction during the year.

EDUCATION. The school population of the State in 1914 was 73,480; the attendance, 50,000; and the enrollment, 63,004. The women teachers in schools under high schools numbered 2491, and the men teachers 89. The average monthly salary of women teachers was $42.18, and of men teachers $65.91.

FINANCE. The report of the State Treasurer for the fiscal year ending Aug. 31, 1914, shows a cash balance at the beginning of the year of $503,902. The total receipts were $4,025,125, and the disbursements $3,283,195, leaving the cash on hand at the end of the year $741,930. The net indebtedness of the State on Sept. 1, 1913, was $1,235,202; this was decreased by the amount of $269,699 during the year, leaving the net indebtedness on Sept. 1, 1914, $963,503.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions receiving relief from the State are the County Farms, State Sanatorium for Tubercular Patients, State Hospital for the Insane, New Hampshire Soldiers' Home, New Hampshire Orphans' Home, and the New Hampshire School for Feeble-Minded. The penal institutions are the New Hampshire State Prison, county jails, and county houses of corrections, and the State Industrial School.

POLITICS AND GOVERNMENT. The Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for Governor, Senator, and representatives in Congress. The Republicans nominated for Governor Rollin H. Spaulding, the Democrats A. W. Noone, the Progressives H. D. Allison, and the Socialists, J. P. Burke. For United States Senator J. H. Gallinger was renominated by the Republicans, and R. B. Stevens was the Democratic nominee. In the election on November 3, the Republicans succeeded in electing their Governor with a vote of 46,415, compared with 33,674 for Noone, Democrat, 2572 for Allison, Progressive, and 1423 for the Socialist candidate. For Senator, Gallinger, Republican, received 42,111 votes; Stevens, Democrat, 36,382; Greer, Progressive, 1938; and Wilkins, Socialist, 1089. The total number of votes cast in the election was 84,082, compared with 87,961 in the presidential election of 1912. The Republicans gained about 12,000 votes, the Democrats about 1000, while the Progressives lost about 15,000. The Republicans elected two representatives to Congress. One of these was C. A. Sulloway, who had previously served several terms in Congress.

STATE GOVERNMENT. * Governor, R. H. Spaulding, Republican; Secretary of State, Edward N. Pearson, Republican; Treasurer, George E. Farrand, Democrat; Auditor, Guy H. Cutter, Democrat; Adjutant-General, Herbert E. Tutherly, Republican; Attorney-General, J. P. Tuttle, Republican; Superintendent of Public Instruction, Henry C. Morrison, Republican; Commissioner of Insurance, R. J. Merrill, Republican.

JUDICIARY. Supreme Court: Chief Justice, Frank N. Parsons, Republican; Associate Justices, Reuben E. Walker, Republican; John E. Young, Republican; Robert J. Peaslee, Democrat; William A. Plummer, Democrat; Clerk, Arthur H. Chase, Republican.

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* Governor elected by Legislature which convened Jan. 1, 1913; November, 1912, election not conclusive.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	17	251	268
Democrats	6	153	159
Progressives	1	5	6
Republican majority	10	98	103

The representatives in Congress will be found in the section *Congress*, under the article UNITED STATES.

NEW HEBRIDES. A group of Melanesian islands jointly administered by France and Great Britain through the French and English high commissioners for the Pacific. Vila, in the island of Efate, is the seat of government. A large proportion of the natives are cannibals. Late in December, 1913, and on Jan. 1, 1914, volcanic eruptions of considerable magnitude disturbed Ambryn Island, in the New Hebrides group, changing the whole face of the island, pouring streams of boiling lava into the sea, and causing the death of several hundreds of natives. Throughout the early part of 1914 there was much discussion of the possibility that Australia might purchase the French rights to the New Hebrides; the suggestion, it was affirmed, had emanated originally from Sir Edward Grey, the British Foreign Minister, and was considered in the French Chamber of Deputies in March. At that time M. Doumergue stated that the Anglo-French condominium in the New Hebrides would be preserved and perfected. In June a conference was held in London to consider a revision of the Anglo-French Convention of 1906, under which the islands had hitherto been jointly governed by France and Great Britain. Concerning the work of the London Conference, no further report was available, owing perhaps to the sudden outbreak of the War of the Nations.

NEW JERSEY. POPULATION. The estimated population on July 1, 1914, was 2,815,663. The population, according to the census of 1910, was 2,537,167.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	272,000	10,472,000	$7,959,000
	1913	275,000	10,862,000	8,146,000
Wheat	1914	79,000	1,422,000	1,550,000
	1913	80,000	1,408,000	1,852,000
Oats	1914	67,000	1,948,000	1,049,000
	1913	70,000	2,030,000	954,000
Rye	1914	70,000	1,295,000	1,062,000
	1913	70,000	1,260,000	1,008,000
Potatoes	1914	92,000	9,986,000	6,061,000
	1913	94,000	8,930,000	7,828,000
Hay	1914	861,000	a 487,000	9,496,000
	1913	861,000	469,000	8,911,000

a Tons.

MINERAL PRODUCTION. The chief mineral products of the State are clay products, zinc, and Portland cement. The value of the clay products in 1913, was $19,705,378. The clay products include every variety of brick, tile, and pottery produced in the United States. Of the total value of the clay products in 1913, $10,866,833 represented brick and tile, and $8,838,545 pottery. New Jersey is an important producer of zinc, and in the quantity of zinc contained in the ores mined, ranks next to Missouri, and second among all the States. The zinc content of the ores mined increased from 69,755 short tons in 1912, to 84,122 tons in 1913, but on account of the decline in the prices of spelter the estimated value of this product declined from $9,626,191 to $9,421,664. Another important mineral industry is the manufacture of Portland cement, the production of which decreased from 4,490,645 barrels in 1912 to 4,255,015 barrels in 1913, but the value increased from $3,052,098 to $3,638,755. Other mineral products in New Jersey are trap rock, limestone, granite, sandstone, building and molding sand, iron ore, mineral paints, mineral waters, sand-lime brick, slate, and talc. The total value of the mineral products of New Jersey in 1913 was $37,271,129, compared with a value of $37,195,940, in 1912.

TRANSPORTATION. The total railway mileage in the State on Dec. 31, 1913, was 5775, of which 2424 was first track, 929 second track, 166 third track, 149 fourth track, and 2105 sidings.

EDUCATION. The total enrollment in the schools of the State during the fiscal year 1912-13 was 516,256, the average daily attendance being 377,366. The male teachers numbered 769, the female teachers 14,275, and the average cost per pupil for current expenses for the year ending June 30, 1913, was $40.81. The average yearly salary of teachers, including principles and superintendents, was $816.38. The total expenditure for maintaining the public schools in the year 1912-13 was $15,427,182. There were 472 school districts in the State with 2111 school buildings, carrying an appraised valuation of $53,044,978. In the high schools of the State were 33,142 pupils, and the approved high schools numbered 154. The Legislature of 1913 amended the compulsory attendance law, which provides for the employment of compulsory attendance officers.

FINANCE. The report of the State Treasurer for the fiscal year ending Oct. 31, 1914, shows a balance on hand on Nov. 1, 1913, of $1,727,992. The net disbursements during the year amounted to $9,678,727 and the net receipts to $9,036,340, leaving a balance on hand Oct. 31, 1914, of $1,085,605.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include State Hospitals for the Insane at Morris Plains and Trenton; State Home for the Feeble-Minded at Vineland; New Jersey State Home for Epileptics, New Jersey State Prison, New Jersey Reformatory, State Home for Boys, State Home for Girls, Soldiers' Home at Kearney; Soldiers' Home at Vineland; and the Sanatorium for Tuberculous Diseases. In these institutions, there were on Oct. 31, 1914, 17,706 inmates, an increase of 1518 over 1913.

POLITICS AND GOVERNMENT. The State Legislature met in 1914 as the sessions are annual. Except for the passage of revenue raising bills to meet the financial needs of the State there were no measures of unusual interest. The two most important bills passed provided for a direct inheritance tax and a bank stock tax. Efforts made to amend the election laws failed, with the exception of a measure providing for preferential voting in cities operating under commission government, thus doing away with primary elections in the selection of officials in that class of municipalities. Both the Senate and the House adopted resolutions, which if re-adopted in 1915 will submit to the people constitutional amendments for woman suffrage, home rule, election of assemblymen by districts, easier methods of amending the Constitution, and permitting excess condemnation. On April 7 an election was held in the seventh congressional district to fill a vacancy caused by the death of Congressman Robert Bremner (q.v.). The Democrats nominated James J. O'Byrne, and the Republicans Dow H. Drukker. Mr. Drukker was elected, receiving nearly twice as many votes as were cast for Mr. O'Byrne. The vote in general showed a falling off in the Democratic vote from 9900 to 5380, and in the Progressive vote from 4746 to 619; the Republican vote on the other hand showed a gain of about 4000, and the Socialist vote increased from 1650 to 5053. The district is normally a Republican one, but Mr. Bremner was elected by the Democrats in 1912 on account of the divided opposition in the Republican party. There were no elections for Governor or United States Senator in 1914. The elections in November were for representatives to Congress and for minor State officers. Primary elections were held by all the political parties on September 22. The only contest of general interest was between the followers of Governor Fielder and those of H. Otto Wittpenn in the struggle to nominate a county ticket in Hudson County. Wittpenn succeeded in nominating only three county candidates. All the political parties held conventions on September 29, for the formulation of party platforms. As a result of the elections held on November 3 Republican representatives were elected in the first, second, fourth, seventh, eighth, ninth, and tenth districts, and Democrats in the others. The total vote cast in the election was 389,889, compared with 432,534 in the presidential election of 1912. The Republicans elected a majority in both branches of the Legislature for the first time since 1910.

OTHER EVENTS. The home-rule act passed by the Legislature, affording to cities under a commission form of government greater latitude in the administration of local affairs, was held to be unconstitutional by the Supreme Court on May 22. On February 20 indictments against 14 officials of Atlantic City, charging frauds (bribery and conspiracy) in the elections of 1909 and 1910 were dismissed. There were severe forest fires in several portions of the State in the latter part of the year.

STATE GOVERNMENT. Governor, James F. Fielder, Democrat; Secretary of State, D. S. Crater, Democrat; Treasurer, Edward E. Grosscup, Democrat; Comptroller, Edward I. Edwards, Democrat; Attorney-General, John W. Wescott, Democrat; Adjutant-General, Wilbur F. Sadler, Jr., Republican; Commissioner of Education, Calvin N. Kendall, Democrat; Commissioner of Insurance, G. M. La Monte, Democrat.

JUDICIARY. Supreme Court: Chief Justice, William S. Gummere, Republican; Associate Justices, C. G. Garrison, Democrat; F. J. Swayze, Republican; T. W. Trenchard, Republican; Charles W. Parker, Republican; James J. Bergen, Democrat; J. F. Minturn, Democrat; Samuel Kalisch, Democrat; Charles C. Black, Democrat; Clerk, William C. Gebhardt, Democrat.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	11	38	49
Democrats	10	22	32
Republican majority	1	16	17

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

NEW MEXICO. POPULATION. The estimated population on July 1, 1914, was 383,551. The population in 1910 was 327,301.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	92,000	2,576,000	$2,061,000
	1913	85,000	1,572,000	1,179,000
Wheat	1914	76,000	1,838,000	1,654,000
	1913	65,000	1,221,000	1,184,000
Oats	1914	52,000	1,976,000	889,000
	1913	50,000	1,500,000	900,000
Barley	1914	5,000	170,000	128,000
	1913	4,000	96,000	69,000
Potatoes	1914	9,000	900,000	855,000
	1913	9,000	612,000	857,000
Hay	1914	206,000	a 515,000	4,790,000
	1913	192,000	399,000	4,828,000

a Tons.

MINERAL PRODUCTION. Large gains were made in the production of gold, silver, copper, lead, and zinc in the mines of the State in 1913. The production of gold showed an increase of $97,480 over the output of 1912, which was $784,446. Silver showed an increase of 94,572 ounces over the production of 1,536,701 ounces in 1912; lead, a decrease of 1,547,654 pounds from the yield of 5,494,018 pounds in 1912; copper, an increase of 22,277,742 pounds over the yield of 34,030,964 pounds in 1912; and zinc, an increase of 2,956,524 pounds over the output of 13,566,637 pounds in 1912. Despite lower average yearly prices for copper and zinc, the total value of the output was $11,694,002, an increase for 1913 of $3,166,047. New Mexico is one of the most important of the Western States in the production of coal. The output in 1913 surpassed the output of any previous year, being 3,708,806 short tons, with a value of $5,401,260. In 1912 there were mined 3,536,854 short tons, valued at $5,036,824. The number of men employed in the coal mines of the State increased from 3928 in 1912, to 4329 in 1913. In October an appalling disaster causing the death of 261 persons, occurred in Mine No. 2 of the Stag Cañon Fuel Company, at Dawson. The coal production of the State in 1914, according to the estimates of the United States Geological Survey, showed an increase of from 15 to 20 per cent. Internal troubles in Mexico were partly responsible for the decreased production of coke. The coal production of the State is estimated at 4,450,000 tons, against 3,708,806 tons in 1913. The quantity of coke made in 1913 was 467,945 short tons, valued at $1,548,536, a maximum record both in quantity and value. The total value of the mineral products increased from $14,391,355 in 1912 to $17,862,369 in 1913. The figures for 1913 are more than double those of two years ago, the increase being due principally to activity in the production of copper.

The total output of the mines of the State in 1914 was estimated by the United States Geological Survey to be valued at $12,070,000, compared with a value of $11,694,002 for the output of 1913. The estimates indicate a yield of $1,172,000 in gold, 1,720,000 ounces of silver, 1,340,000 pounds of lead, 65,600,000 pounds of copper, and 18,300,000 pounds of zinc. These figures show increases of $290,000 in gold, 90,000 ounces of silver, 9,300,000 pounds of copper, and 1,800,000 pounds of zinc, and a decrease of 2,600,000 pounds of lead.

EDUCATION. There were in 1913–14, 1016 school districts in the State in which were 102,068 pupils of school age; of these, 67,147 were enrolled in the public, elementary, and high schools, and 49,823 were in average daily attendance. The teachers numbered 1692, of whom 531 were men and 1161 women, the average monthly salary of teachers being $58.65 for women and $62.39 for men. There were 52 district high schools, 28 of which have four-year courses, and in addition there are 14 county high schools. The total disbursements for education in 1914 amounted to $1,346,402.

TRANSPORTATION. The total railway mileage in the State in 1913 was 3060. The lines having the longest mileage were the Atchison, Topeka, and Santa Fe, 1194; the El Paso and Southwestern, 635; the Atchison, Topeka, and Santa Fe coast lines, 242; the Denver and Rio Grande, 217; the Southern Pacific, 167; and the Chicago, Rock Island, and Pacific, 152. None of the steam railroads carried any new construction during the year 1914.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions under the control of the State included the Deaf and Dumb Asylum, and New Mexico State Penitentiary at Santa Fe; New Mexico Institute for the Blind at Alamogordo; New Mexico Insane Asylum at Las Vegas; New Mexico Reform School at Springer; and Miners' Hospital of New Mexico at Raton.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. There was no election for Governor or United States Senator. The elections on November 3 were for representative to Congress, for a member of the State corporation commission, and members of the House of the Legislature, as well as one district judge and one district attorney, besides minor officers. Hugh H. Williams, Republican, was elected corporation commissioner. The House of the Legislature consists of 33 Republicans, 1 Progressive, 1 Socialist, and 14 Democrats. Three amendments to the State Constitution were also voted upon and carried, one providing that State and county officials may succeed themselves, the second that the terms of State and county officials be reduced from four to two years, and the third repealing the clause on taxation in the Constitution and eliminating the State Board of Equalization. The Republicans were successful in electing their candidate, B. C. Hernandez, by 23,812 votes, compared with 19,805 for H. B. Ferguson, Democrat, and 1695 for F. C. Wilson, Progressive. The total vote cast was 46,421, compared with 49,370 in the presidential election of 1912.

STATE GOVERNMENT. Governor, William C. McDonald, Democrat; Lieutenant-Governor, E. C. de Baca, Democrat; Secretary of State, Antonio Lucero, Democrat; Treasurer, O. N. Marron, Democrat; Auditor, William G. Sargent, Republican; Attorney-General, Frank W. Clancy, Republican; Superintendent of Education, Alvan N. White, Democrat.

JUDICIARY. Supreme Court: Chief Justice, Clarence J. Roberts, Republican; Associate Justices, Richard H. Hanna, Progressive, and Frank W. Parker, Republican; Clerk, José D. Sena, Republican.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	15	33	48
Democrats	7	14	21
Progressives	2	1	3
Socialists	0	1	1
Republican majority	6	17	23

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

NEW SOUTH WALES. A State of the Commonwealth of Australia, in the southeastern part of the continent between Queensland on the north and Victoria on the south. The area is estimated at 309,460 square miles. The census of April 3, 1911, returned the population at 1,646,734, exclusive of full-blooded aboriginals. The capital is Sydney, the largest city of Australia (population, in 1911, with suburbs, 629,503). Governor in 1914, Sir Gerald Strickland (appointed 1912); Lieutenant-Governor, Sir William Portus Cullen; Premier, W. A. Holman. See AUSTRALIA.

It was announced during the year that the government railways of New South Wales, Australia, had been forced to increase freight rates by 10 per cent, and passenger fares from 5 to 50 per cent, which would produce a total new yearly revenue of $1,750,000, or more than 5.3 per cent of gross operating revenues in 1913.

HISTORY. Returning to power after the December (1913) elections, with a strong Labor backing in the Legislative Assembly, the State Premier, Mr. Holman, pressed forward with redoubled vigor to realize his socialistic programme. In addition to the bold irrigation schemes which the State had already undertaken, Mr. Holman's Labor ministry confidently engaged upon numerous other public enterprises in the realm of industry, such as a State dairy, State boiling-down works, a State fishery, a State flour mill, and a State bakery. This last, Mr. Holman explained, was not to enter into general competition with private bakers, but was instituted to provide bread for government employees and public establishments, because the estimates handed in by private bakers showed an unjustifiable increase of 28 per cent over the previous year. When the New South Wales Parliament was opened at Sydney on March 3, 1914, Governor Sir Gerald Strickland announced that the government would bring in measures for the imposition of a super-tax on land, for the amalgamation of the Savings Banks with the Government Savings Bank, and for the further provision of government-owned model workingmen's cottages. The budget statement, made by Mr. Holman on March 12, was remarkable for the large place it gave to appropriation for the development of railways. On March 25 the government submitted income-tax proposals, increasing the rate of the tax and lowering the exemption. In May, speaking before the Trades and Labor Council, Mr. Holman still further outlined his policy of enlarging the field of government enterprise, building model suburbs, setting up a fair rent court, and working for the 44-hour working week, the universal Saturday holiday, and the recognition of rural workers. During the same month, a new ministerial department was created for the better protection of public health, and Mr. Flowers was appointed as the first chief of the new department. As opposed to the increasingly socialistic trend of the dominant political party, one of the most interesting developments of the year was the formation of a new parliamentary group, the Country party. As a result of the solidarity gained by the Farmers' and Settlers' Association conference, ten members of the Legislative Assembly, representing rural districts, seceded from the Liberal party and formed a separate organization; they were careful to announce, however, that in combating the socialistic schemes of the ministry they would still coöperate closely with Mr. Wade, leader of the Liberal Opposition. The men who formed the new party claimed that in past years the urban Liberals, by giving insufficient consideration to rural interests and by attempting to dictate rural nominations, had estranged many of their former supporters, whereas the new Country party, by appealing directly to the farmers, would prove more effective as the ally than as an integral part of the Liberal organization.

NEWTON, RICHARD HEBER. An American clergyman and lecturer, died Dec. 19, 1914. He was born in Philadelphia, in 1840, graduated from the University of Pennsylvania in 1862, and for the year following he studied at the Episcopal Divinity School in Philadelphia. He was ordained priest of the Protestant Episcopal Church in 1866, and in the same year became rector of St. Paul's in Philadelphia, having previously served as assistant in several other parishes. His mental gifts quickly placed him in the front rank as clergyman, and in 1869 he became rector of the Anthon Memorial Church, afterwards called All Souls Church in New York City, where his sermons immediately attracted attention and his congregation rapidly increased. He preached a series of sermons on the right method of studying and interpreting the Scriptures, in which the radical nature of his views led to much discussion, and charges of heresy were made against him. These were presented to Bishop Potter, who after laying them aside for a year dismissed them, but asked to have the sermons discontinued. This was done, although afterwards they were printed in book form. As a result of ill health and an offer from Leland Stanford University he resigned the rectorship of All Souls in 1902. After becoming preacher at the university he devoted most of his time to psychical research, and in 1905 delivered an address before the American Institute for Scientific Research in which he declared that he believed in spiritualism. Dr. Newton did a great amount of charity work and was interested in social reform. He was the author of many theological works, including: *The Children's Church* (1870); *The Morals of Trade* (1876); *Studies of Jesus* (1880); *Right and Wrong Uses of the Bible* (1883); *The Book of the Beginnings* (1884); *Social Studies* (1886); *Christian Science* (1898); and *Parsifal* (1904).

NEW YORK. POPULATION. The estimated population on July 1, 1914, was 9,899,761. The population in 1910 was 9,113,614.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	550,000	22,500,000	$18,716,000
	1913	527,000	15,020,000	12,166,000
Wheat	...1914	360,000	8,100,000	8,748,000
	1913	340,000	6,800,000	6,324,000
Oats	1914	1,275,000	40,162,000	20,483,000
	1913	1,275,000	42,712,000	20,075,000
Rye	1914	129,000	2,288,000	2,082,000
	1913	133,000	2,288,000	1,716,000
Barley	...1914	75,000	2,100,000	1,491,000
	1913	77,000	2,056,000	1,449,000
Potatoes	.1914	367,000	53,215,000	28,415,000
	1913	360,000	26,640,000	21,312,000
Hay	1914	4,653,000	*a* 5,584,000	81,526,000
	1913	4,700,000	5,358,000	81,977,000
Tobacco	..1914	4,600	*b* 5,980,000	718,000
	1913	4,300	4,386,000	535,000

a Tons. *b* Tons.

Mineral Production. The clay-working and quarrying industries furnish products of chief mineral value. New York, lying entirely outside of the coal-bearing formation, produces no solid mineral fuel, but has a considerable production of both natural gas and petroleum, each of which had an output exceeding $2,000,000 in 1913. The one primary metal product of commercial importance is iron, but the larger part of the pig iron made in the State is from Lake Superior ores. The output from the blast furnaces amounted in 1913 to 1,967,449 long tons, valued at $30,203,673, compared with 1,973,090 long tons, valued at $28,059,058 in 1912. The value of pig iron is not included in the total value of the mineral production. There were mined in the State in 1913, 1,420,889 long tons of iron ore, valued at $3,100,235, compared with 1,167,405 tons, valued at $2,933,024, in 1912. The clay products in 1913 were valued at $11,469,476, compared with $12,058,858 in 1912, the decrease being due to a falling off in the output of common brick, the chief clay product of the State, in the Hudson River region. The output of the quarries is second in importance among the mineral products, the value of the stone production in 1913 being $7,185,293, compared with $6,415,015 in 1912. New York ranks third in the total value of quarry products, being exceeded only by Pennsylvania and Vermont. Cement is third among the mineral products, the marketed production of which in 1913 amounted to 5,354,129 barrels, valued at $4,918,119, compared with 4,857,960 barrels, valued at $3,610,365 in 1912. The only other important mineral products are gypsum, in the production of which New York ranked second, sand and gravel, natural gas, petroleum, and aluminum. The total value of the mineral products in 1913 was $41,594,052, compared with $38,431,910 in 1912.

Transportation. The total mileage of steam railways in the State on June 30, 1914, was 8473. Lines having the longest track were the New York Central, 2690; Erie, 948; Lehigh Valley, 659; Delaware and Hudson, 728; New York, Ontario, and Western, 477; Long Island, 398; Pennsylvania, 347. The mileage of electric roads was 2074. There were about 8 miles of first main track constructed during the year and 24 miles of second track.

Finance. The report of the State Comptroller shows a balance on hand on Sept. 30, 1913, of $10,436,004. The receipts for the fiscal year 1914 amounted to $50,642,716, and the disbursements to $53,563,355, leaving a balance on hand at the end of the fiscal year of $13,025,721. The total State debt on Sept. 30, 1914, was $159,260,660; of this, $101,000,000 was for canals, $55,000,000 for the general fund, $2,500,000 for the contingent fund, and $760,000 from bounty debt.

Education. The total school population of the State for the school year ending July 31, 1912, was 2,208,675. The total enrollment in 1913 was 1,485,706, and the average daily attendance 1,182,656. The number of teachers in the day schools was 45,359. The number of teachers for any portion of the year was 5231 males, and 42,638 females, the average salary of teachers being $935.70 a year.

Politics and Government. The State Legislature, which meets annually in New York, passed a large number of measures, but none of first importance. A measure providing for a proposed amendment to the Constitution relating to taxation was enacted. Certain amendments were made to the labor laws, and cities of the second and third class were authorized to adopt a simplified form of government, there being seven optional forms of charter, among them "government by limited council with collective supervision," "government by limited council with appointive city manager," "government by limited council with division of administrative duties," "government by means of separate executive and legislative departments." Several amendments were made to the charter of New York City. There were elections during the year for Governor, United States Senator, and members of the National House of Representatives. Governor Glynn, who became Governor on the removal of Governor Sulzer in 1913, was a candidate for reëlection on the Democratic ticket, being opposed for the nomination by John A. Hennessy, who took a prominent part in the campaign of 1913, and whose revelations of corruption were largely responsible for the overwhelming Tammany defeat of that year. Governor Glynn had the support of the Democratic organization in the State. There were three candidates for the Republican nomination—Charles S. Whitman, District Attorney of New York City, Harvey D. Hinman, a prominent member of the Assembly, and Job E. Hedges, a well-known lawyer and a former candidate for Governor. An effort was made to bring about an endorsement of Mr. Whitman's nomination by the Progressive party, but this failed largely as a result of the opposition of Theodore Roosevelt, who asserted that Mr. Whitman was a tool of the State machine, and had in addition received favors from Tammany Hall. Mr. Hinman was the candidate of the Progressive wing of the Republican party. Mr. Hedges ran on an Independent ticket. The Progressive candidates for Governor were Frederick M. Davenport and William Sulzer, former Governor. The primary elections for nomination were held on September 21. Mr. Glynn was nominated by the Democrats by a vote of 175,772 to 68,387 for Hennessy, his opponent. Mr. Whitman was nominated by the Republicans, receiving 120,073 votes to 61,952 for Hinman, and 43,012 for Hedges. Mr. Davenport received the Progressive nomination, defeating William Sulzer by a vote of 18,643 to 14,366. The candidates for

United States Senator in these primaries were Democrats, James W. Gerard, ambassador to Germany, Franklin D. Roosevelt, Assistant Secretary of the Navy, and James S. McDonogh; and Republicans, James W. Wadsworth, Jr., William M. Calder, and David Jayne Hill. The successful Republican and Democratic nominees were, respectively, Mr. Wadsworth and Mr. Gerard. These primary elections were held under the new primary law passed in 1913. William Sulzer, who was defeated for the Progressive nomination, announced his candidacy on an Independent ticket. The campaign was a very aggressive one, and there was a general impression that the Democrats would carry the State, as it was generally assumed that the Progressive vote would be large enough to materially weaken the Republican strength. The results of the election of November 3 came, therefore, as a general surprise. Mr. Whitman, the Republican candidate, was elected, receiving 686,701 votes, compared with 541,269 for Glynn, Democrat, 45,586 for Davenport, Progressive, and 126,270 for Sulzer, Independent. Mr. Sulzer's vote was surprisingly large, considering the fact that he had the support of no important party. The Republicans also succeeded in electing a United States Senator. Mr. Wadsworth received 639,112 votes, Gerard 571,419, Bainbridge Colby, Progressive candidate, 619,977. The total number of votes cast in the election was 1,439,969, compared with 1,587,983 cast in the presidential election of 1912. The Republican vote showed an increase of over 230,000, the Democratic vote a decrease of over 100,000, and the Progressive vote a decrease of nearly 350,000.

On April 7 a small majority of the voters of the State agreed to a revision of the State Constitution to begin in April, 1915. At the election held in November delegates to this convention were elected. All the delegates-at-large were Republicans, and the list included such well-known Republicans as Seth Low, Lewis Marshall, Edward Parsons, Senator Root, Jacob G. Shurman, Henry L. Stimson, and George W. Wickersham.

A strong effort was made on the part of Governor Glynn to economize the administration of the State, and this was to a large extent successful. He had some difficulty in getting certain measures through the Legislature, and was obliged to call a special session to pass necessary appropriation bills. Investigations were carried on in several State departments during the year, including the Highway Department, and revelations of inefficiency and dishonesty were made. The State Treasurer, John J. Kennedy, committed suicide on February 15, on the eve of testifying in regard to his knowledge of graft in the State departments.

New York City. On Feb. 2, 1914, Joseph Cassidy, the Democratic leader of Queens Borough, was convicted of selling a nomination for the Supreme Court in 1911, and with him was convicted William Willett, who had paid to Cassidy $25,000 for the nomination. Mayor Mitchell introduced into the Legislature several bills designed to give additional power to city authorities in the administration of the police force. He had secured the provisional promise of Colonel Goethals to take charge of the police department if such bills were passed, but the measures were defeated in the Assembly by a vote of 94 to 49. There were disturbances in the city throughout the year resulting from the agitation of the Independent Workers of the World. Members of this body invaded churches and other buildings, demanding food and work. Several of their leaders were arrested and sentenced to prison. On April 17 an attempt was made to assassinate Mayor Mitchell by an insane man named Michael P. Mahoney. Mr. Mitchell escaped without injury, but a companion was wounded in the hand. On April 13 the four gunmen convicted of the murder of Herman Rosenthal in 1912 were electrocuted.

State Government, 1915. Governor, Charles Seymour Whitman; Lieutenant-Governor, Edward Schoeneck; Secretary to Governor, William A. Orr; Secretary of State, Francis M. Hugo; Comptroller, Eugene M. Travis; State Treasurer, James L. Wells; Attorney-General, Egburt E. Woodbury; State Engineer and Surveyor, Frank M. Williams; Superintendent of Insurance, Frank Hasbrouck; Superintendent Banking Department, Eugene Lamb Richards; Superintendent State Prisons, John B. Riley; Superintendent Public Works, W. W. Wotherspoon; State Fire Marshal, Thomas J. Ahearn; Commissioner of Education, John H. Finley.

The representatives in Congress will be found in the article United States, section *Congress*.

NEW YORK AQUEDUCT. See Aqueducts.

NEW YORK CITY. See Architecture; City Planning; New York, section *New York City*.

NEW YORK COMMERCIAL TERCENTENARY. See Celebrations.

NEW YORK, NEW HAVEN, AND HARTFORD RAILROAD. See Railways.

NEW YORK SUBWAYS. See Rapid Transit.

NEW YORK UNIVERSITY. An institution for higher education, founded in 1831 in New York City. The enrollment in the various departments in 1914 was as follows: University College, 298; School of Applied Science, 261; Washington Square College, 419; School of Commerce, Accounts, and Finance, 2290; University and Bellevue Hospital Medical College, 446; School of Pedagogy, 434; Graduate School, 396; Veterinary College, 13; University Law School, 676. The faculty numbered 450. The university lost from its faculty by death during the year Professors Bryant, Le Fevre, and Gillett. There were received during the year $10,000 for establishing the Egbert LeFevre Deanship. The productive funds amount to $1,379,721, and the income in 1913–14 was $60,557. The president is Elmer Ellsworth Brown.

NEW ZEALAND, Dominion of. Three principal and four smaller islands in the South Pacific, which with the annexed groups of small islands and islets, constitute an autonomous British dependency. Capital, Wellington.

Area and Population. In the table below will be seen the area of the principal islands, with the European population for comparative census years, with the Maori population in 1911:

	Sq. m.	*Pop. 1901*	*Pop. 1911*	*Maoris*
North Island ..	44,468	390,571	563,729	46,632
South " ...	58,525	381,661	444,120	2,681
Stewart " ..	665	272	357	63
Total N. Z. ..	103,658	772,504	1,008,206	49,376

	Sq. m.	*Pop. 1901*	*Pop. 1911*	*Maoris*
Chatham Islands	375	207	258	219
Kermadec	13	8	4	*249
Total	104,046	772,719	1,008,468	49,844

* Maori wives as European (enumerated in European census) scattered among the various islands.

Annexed islands, 1903 square miles, containing 12,340 inhabitants; making a total of 104,751 square miles, and 1,021,066 inhabitants, exclusive of 49,844 Maoris. Total population with Maoris, 1,070,910. Wellington had 64,372 inhabitants in 1911 (70,729 with suburbs); Auckland, 40,536 (102,676); Christchurch, 53,116 (80,193); Dunedin, 41,529 (64,237); Invercargill, 12,782 (15,858); Wanganui, 10,929 (14,702); Napier, 10,527 (11,736).

EDUCATION. Primary education is free, secular, and compulsory. The primary schools numbered, in 1912, 2323, with an enrollment of 170,958, inclusive of 9607 children of Maori or mixed race. In addition there are 108 village schools, with an enrollment of 4694, mostly Maori. Government expenditure in 1912–13 for primary instruction, £1,034,842. Provision is made for secondary education, and the government expenditure amounted in 1912 to £113,788. There are excellent special schools, and the University of New Zealand has four affiliated endowed colleges, which specialize in various subjects.

The State supports no creed. Protestants are greatly in the majority, and of these the predominant church is the Church of England, with 443,842 adherents, or 41.14 per cent of the whole.

PRODUCTION. The area of land under occupation for agricultural purposes in 1910–11 totaled 40,238,126 acres, divided as follows: 1,015,822 acres under cereals and pulse; 713,682 under green crops; 5,000,226 under sown grasses on plowed land, and 9,214,515 on land not plowed; 23,972,236 under natural grasses and unimproved land; 209,973 acres fallow; and 780 in vineyards. In the table below will be found the acreage under main cereals, with the yield for two years, and the yield per hectare in 1912–13 (figures for 1913–14 are subject to revision):

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*ha.*
Wheat ..	76,836	76,889	1,409,687	1,469,664	18.3
Barley ..	15,170	14,164	312,442	272,160	20.6
Oats	163,356	161,872	3,478,326	2,653,500	21.3
Corn ...	1,895	2,428	56,419	101,604	29.8

Total live stock returned in 1911: 404,284 horses (99,859 in 1874), 2,020,171 cattle (494,917), 23,750,153 sheep (11,704,853). Of the foregoing, 486,922 sheep, 61,300 cattle, and 48,222 horses were owned by Maoris.

The wool export for 1912 amounted to 188,361,790 pounds, valued at £7,105,483 (1,772,344 pounds, valued at £93,104, in 1855). Frozen meat takes second place among export products, the amount shipped in 1912 being 2,573,238 hundredweight, valued at £3,909,569. Frozen fish, preserved meats, salt meats, smoked ham, etc., are exported, as well as dairy products. There are extensive coal mines and gold fields. The annual gold production is valued at about two million pounds sterling.

COMMERCE, ETC. In the following table are shown trade and finance statistics for comparative years:

	Imps.	*Exps.*	*Rev.*	*Expend.*
1909-10	£15,674,719	£19,661,996	£9,238,917	£8,990,923
1910-11	17,051,583	22,180,209	10,297,028	9,343,106
1911-12	19,545,879	19,028,490	11,032,544	10,340,368
1912-13	20,976,574	21,770,581	11,784,271	11,082,038

Trade figures are for calendar, and finance figures for fiscal years. The gross public debt stood March 31, 1913, at £90,060,763; accrued sinking fund, £2,603,642; net public debt, £87,457,121. Customs revenue, 1912–13, £3,407,538, not including duty on beer, amounting to £124,223. Total tonnage entered and cleared, 1912–13, 3,340,722, of which 3,215,501 tons British.

The government controls the majority of the important public works. Thousands of miles of highways have been constructed, and many are still maintained by the government. The public works of the dominion, including both railways and roads, but not buildings, are largely carried on under the coöperative system, the government providing all material and letting the construction to private corporations under fixed rates, and with a prescribed scale of wages.

The mileage of the government railways of New Zealand opened for traffic on March 31, 1914, was 2863, and the average length of line operated, 2861 miles. The capital represented by the opened line was £32,355,087, an average of £11,309 per mile. The receipts for the year were £4,043,328, expenditure £2,880,323, leaving a profit of £1,163,005, the percentage of net receipts to capital being 3.61, and of expenditure to receipts, 71.24. There were 14,176 employees. There are 12,508 miles of telegraph lines, and 41,892 of wires. The Pacific cable traffic is transmitted across the Atlantic by the Anglo-American and Commercial Telegraph Companies. The line was opened for traffic to Australia and Fiji in the spring of 1902, and completed to Vancouver Island in the following October; it has been open for international traffic since December 8 of that year.

ARMY. Compulsory military training is required by the Defense Act of 1909, involving a training for the cadets and territorial soldiers, the former serving from 12 to 18 years of age, while the territorial soldier serves from the age of 19 to 25, putting in a certain number of drills, parades, and tours in camp. The strength in 1914 was approximately as follows: Territorial forces, 30,000, senior cadets (15 to 18), 40,000, members of rifle clubs, 25,000. The forces of the dominion were in command of Maj.-Gen. A. J. Godley, C.B., and there was a dominion section of the Imperial General Staff, with Lieut.-Col. E. S. Hurd in charge of military training and staff duties. Sixteen other British officers were serving in the dominion. In 1914 New Zealand offered for war service one brigade each of mounted riflemen, field artillery, and infantry, besides 200 Maoris for service in Egypt. A force of 53 officers and 1351 men sailing from Wellington, escorted by three small cruisers and later by the Australian squadron, captured German Samoa and raised the dominion flag at Apia. Various New Zealand officers were attached to the Imperial army, and one of them was appointed to command a regular brigade in the expeditionary force.

NAVY. New Zealand is a party to the agreement between the Commonwealth of Australia and the imperial government which provides for the maintenance by the British admiralty board of a naval force in Australasian waters. New Zealand contributes £40,000 annually. The battlecruiser *New Zealand*, completed early in 1913, was built for the Imperial navy at the cost of the dominion. She left Portsmouth, Feb. 6, 1913, on her maiden voyage to New Zealand, returning in November to England.

GOVERNMENT. A Governor, aided by an executive council, administers the country. There is a legislative council and a house of representatives. The electoral act of 1893 extended to women the right to register as electors, and to vote at the elections for members of the house of representatives. In 1865 the administrative headquarters were removed from Auckland to Wellington. The Governor in 1914 was Arthur Foljambe, Earl of Liverpool.

HISTORY. When the Earl of Liverpool opened the New Zealand Parliament, June 25, 1914, he intimated that measures would be proposed for the regulation of the high cost of living, for the regulation of the use of the Bible in the schools, for the introduction of the referendum, and for the reform of the Legislative Council. The Legislative Council Reform Bill, presented in 1913 by Mr. Massey's "Reform" government, was discussed in the last YEAR BOOK, and it is necessary here only to recall that the bill provided for the election of the Legislative Council by popular suffrage with proportional representation, the Council having been hitherto appointed by the government. Repeatedly in past years the Legislative Council had resisted similar proposals, but this time the government was able to pass the bill by appointing eleven new councilors who were pledged to vote for the measure. With much justification it was expected that the result of this reform would be to facilitate radical legislation which had frequently been vetoed by the undemocratic upper chamber. New Zealand's naval policy was a second topic of interest in 1914. Since Mr. Allen's budget speech of August, 1913, the future attitude of the dominion toward imperial defense had been much in discussion and much in doubt, for it was uncertain just where New Zealand would strike the compromise between her old policy of contributing funds to the imperial naval authorities, which was repugnant to local patriotism, and the Australian policy of building up a local fleet unit, which would be costly, impracticable, and well-nigh impossible for a colony of New Zealand's relatively small resources. Much importance was therefore attached to a speech made by the Premier in February, 1914, at Tearoha, wherein he announced that his government had requested the Home authorities, in accordance with the 1909 agreement, to station two cruisers of the *Bristol* class in New Zealand waters within the next year and a half; New Zealand would then be willing to add $250,000 to her annual naval contribution. Believing, as he did, that the Pacific Ocean would be the storm centre of the future, the premier was extremely anxious to uphold the naval supremacy of the Empire in Australasia, and he declared that, in case the petition of his government should be refused, he would ask Parliament for permission to build one or more cruisers in British shipyards. Frequent allegations were made that a controversy had arisen between the dominion and the mother country, although in February, Colonel Allen, as Minister of Defense, took especial pains to state that the New Zealand government was in perfect harmony with the British admiralty. In answer to New Zealand's request for two *Bristol* class cruisers, Mr. Winston Churchill, First Lord of the Admiralty, announced on March 12 that two light cruisers were being retained in the New Zealand division, and would be manned as far as possible by New Zealanders; H. M. S. *Philomel*, in addition, would be transferred to the control of the New Zealand government. But it soon appeared that this settlement would not give complete satisfaction, especially after Mr. Churchill's speech commending the Australasian colonies to the protection of Japan, England's Asiatic ally. Many New Zealanders resented the fact that the dreadnought *New Zealand*, presented by the dominion to the empire, was not allowed by the admiralty to remain in Australasia; and the New Zealand *Herald* undoubtedly voiced widely-felt sentiments when it accused the British admiralty of violating the 1909 agreement, and added: "In less than four years we are told that dreadnoughts are not needed here, that *Bristol* cruisers are not needed here, that we are safe from all molestation under the protection of Japan. . . . We, who are British, are told to rely on Japan; for better or for worse, we must rely on our own." Summing up the situation in April, Mr. Allen said: "New Zealand is faced by this problem. Should it continue to pay the Motherland a certain sum yearly and have no voice in the expenditure of the money, no representation on questions of peace or war? No self-respecting people could tolerate such a condition of affairs. . . . Instead of subsidizing the Admiralty, the money could be utilized in training New Zealanders; so that in time they would be able to serve not only New Zealand, but the Motherland as well." Thus in New Zealand, as in Australia, the growing sentiment of local patriotism had thrown the colonial government out of harmony with the British admiralty's policy of concentrating the naval forces in European waters; and behind the technical question as to the disposition of the fleet lay the vital question whether the power of the Empire or the conscious security of the dominion came first in the mind of New Zealanders. As far as land defense was concerned, however, no such occasion for controversy existed, and a most cordial welcome was extended to Sir Ian Hamilton, who, as Inspector General of Overseas Forces, heartily complimented the colony upon the results of its scheme of compulsory military training, and suggested several practical improvements.

The approach of war in July and the first few days of August banished as if by magic the jealousies and contentions which had marred New Zealand's loyalty to the British Empire. Amidst the acclamation of all parties, Mr. Massey on July 31 declared—and his declaration was supported by Sir Joseph Ward, leader of the Opposition—that if necessary New Zealand would send her utmost quota to support the Empire. War sentiment ran high. On August 3, although war had not yet been declared, proclamations were published, placing the New Zealand naval forces under the control of the British government, and calling up the Royal Naval Reserves. With enthusiastic loyalty New Zealand raised, drilled, and equipped an expeditionary force of 8000 men for the mother country. The colony, moreover, was soon able to boast a victory; for on August 29 an expeditionary force from New Zealand, covered by the warships *Australia* and *Melbourne*, landed at Apia in German Samoa, and on August 30 declared that territory annexed to the British Crown.

NICARAGUA. A Central American republic. The capital is Managua.

AREA AND POPULATION. The area is estimated at 128,340 square kilometers (49,552 square miles). The number of inhabitants is not known with accuracy, but is roughly estimated at 600,000. There is a very small proportion of pure whites in the country, the bulk of the population being Indian and Mestizo. The larger towns are: León, with about 63,000 inhabitants; Managua, 40,000; Granada, 25,000; Matagalpa, 16,000; Masaya and Bluefields, 15,000 each; Chinandega, 12,600. Illiteracy is prevalent. Most of the people profess Roman Catholicism.

PRODUCTION AND COMMERCE. Nicaragua has valuable timber and mining resources, and the country is capable of considerable agricultural development, but the instability of political conditions discourages foreign investments, and the native population is lacking in industrial initiative. There is some exploitation of mahogany and other valuable woods. Mining is almost limited to a few gold workings. Grazing is of importance. There are three leading crops—coffee, bananas, and sugar. Coffee is grown in the western districts, on plantations controlled by Americans and Germans; bananas are cultivated chiefly in the Bluefields region; sugar cane is raised more or less throughout the country. Other crops are corn, cacao, beans, and tobacco.

Imports and exports have been valued as follows:

	1909	*1910*	*1911*	*1912*
Imps. ..	$2,588,257	$2,856,305	$5,724,695	$4,966,820
Exps. ..	3,989,428	4,545,075	6,579,414	3,861,516

Leading imports in 1911 and 1912 respectively, in thousands of dollars: cotton goods, 1961 and 1260; iron and steel manufactures, 570 and 659; flour, 314 and 469; rice, 60 and 240; beverages, 171 and 228. The most important exports in 1911 and 1912 were valued as follows, in thousands of dollars: coffee, 4291 and 1773; gold, 933 and 907; bananas, 339 and 423; hides and skins, 173 and 249; rubber, 577 and 165; woods, 42 and 121; sugar, 11 and 26; cotton, 5 and 26. The coffee export in 1911 amounted to 7,647,850 kilos, valued at $4,290,506; in 1912, 6,162,711 kilos, valued at $1,773,105. Trade by countries, in thousands of dollars:

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
United States	2,755	2,549	2,057	1,767
United Kingdom	1,412	989	528	515
Germany	648	604	1,075	702
France	448	256	2,619	626
Italy	217	122	76	48
Total, including other	5,725	4,967	6,579	3,862

COMMUNICATIONS. A railway connects the Pacific port, Corinto, with Chinandega, León, Managua, Masaya, Diriamba, and Granada. With short branches it has a total length of 171 miles. There are in addition some 20 miles of private railway. Steamers ply between Granada, on Lake Nicaragua, and San Juan del Norte, on the Caribbean. Telegraphs in 1912, 148 offices, with 4095 kilometers of wire; telephones, 23 offices, with 1259 kilometers of wire; post offices, 151.

FINANCE. Revenue and expenditure amounted in 1909 to 12,994,275 and 18,639,308 paper pesos respectively; in 1910, 15,182,852 and 34,573,125 (of which 22,520,277 extraordinary on account of the 1909 revolution). In these years the paper peso, of fluctuating value, was worth about 16 cents. The foreign debt at the end of 1913 is stated at £1,191,560. A conversion plan has been undertaken, and in 1912 a new monetary unit was introduced, the gold córdoba, equivalent to the American dollar. In the latter part of 1913, paper money amounting to 37,551,554 pesos had been burned since the beginning of the monetary conversion, and 9,478,805 pesos paper were still in circulation.

GOVERNMENT. Under the constitution bearing date of April 5, 1913, the legislative power is vested in a Congress of two houses, the Senate and the Chamber of Deputies. Deputies, 40 in number, are elected for four years by direct vote. The President is also elected by direct vote, and for four years. The President, elected for the term beginning Jan. 1, 1913, is Adolfo Díaz. Vice-President, Fernando Solorzano.

HISTORY. By the terms of a law which the Congress passed for the promotion of education, a tax of 15 centavos was to be levied on every liter of spirits, 28 centavos on every liter of pure alcohol, and 4 centavos on every pound of tobacco; two-tenths of the resultant revenue was to be expended on normal schools, three-tenths on other educational institutions, and five-tenths on various charities. More than once during the course of the year American marines were landed in Nicaragua to protect American interests, and incidentally the government of President Adolfo Díaz, against ominous insurrectionary disturbances. With regard to Nicaraguan relations with the United States, see UNITED STATES. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

NICHOLAS, GRAND DUKE. See WAR OF THE NATIONS.

NIGER, MILITARY TERRITORY OF. See MILITARY TERRITORY OF THE NIGER.

NIGERIA, COLONY AND PROTECTORATE OF. A British possession in West Africa, composed of the old protectorates of Northern Nigeria and Southern Nigeria. On the first of January, 1914, the order in council of Nov. 22, 1913, providing for this union, came into operation. Another order of the same date defines the boundary of the colony of Nigeria; the protectorate, divided into two or more portions, is to be administered immediately by lieutenant-governors. The colony is to be under a governor and commander-in-chief, and provision is made for executive and legislative councils. The three divisions of Southern Nigeria are effaced. The railways, customs, marine, judicial and legal departments, and the treasury have been amalgamated, posts and telegraphs to follow. A site for the capital is to be selected on the river Kaduna; and in the meantime the administrative headquarters will be at Lagos. There will be an annual grant-in-aid of £100,000 for five years, dating from April, 1913.

The old names are retained in the paragraphs below, since the statistics given are for years prior to the amalgamation.

Northern Nigeria. The former protectorate of Northern Nigeria, lying to the north of the protectorate of Southern Nigeria, covers an estimated area of 256,200 square miles, and comprehends the empire of the Fulani, with its nominal dependencies of Kano, Nupe, Illorin, Muri, Zaria, Adamawa, and Bauchi, together with Idah and the pagan countries of Borgu to the west of the Niger, Bornu in the northeast toward Lake Chad, and the belt of pagán tribes inhabiting the country between the Benue and the northern boundary of Southern Nigeria. Lokoja, at the junction of the Niger and the Benue, the former military headquarters, is the principal station and garrison with the exception of Zungeru, near the Kaduna. Jebba, the capital until 1902, is at the head of the river navigation. Included in the British sphere is the emirate of Sokoto. The Hausa States of the Fulani empire are densely populated; a rough estimate gives about 8,000,000, mainly Mohammedans, of pastoral habit. Pagan tribes inhabit the Kabba country, and people the northern and eastern banks of the Niger.

The products are rubber, hides, ground nuts, shea butter, ivory, chillies, and medicinal herbs. In the Bauchi region tin is mined. The deposits extend over some 16,000 square miles; 199 enterprises were in operation in 1913, and the exports for 1912 were 2611 tons of cassiterite. There are duties on imports only, and these are collected at the coast. Imports and exports by commercial firms by way of Idah amounted in 1912 to £264,078 and £465,360, respectively. The local revenue from April to December, 1912, was £528,993; grant-in-aid, £95,000; expenditure, £710,531.

Southern Nigeria. The former colony and protectorate of Southern Nigeria extended from the Northern Nigerian boundary to the Gulf of Guinea, and from Dahomey to the Kamerun country. Its area was 79,880 square miles, and its population, in 1911, 7,857,983. For purposes of administration it was divided into three provinces—the Western, or Lagos, including the old colony and protectorate of Lagos, with headquarters at the town of Lagos; the Central, or Niger, with headquarters at Warri; and the Eastern, or Calabar, with headquarters at Calabar. The former protectorate was composed of the two latter provinces.

The country has an evil climate which renders it uninhabitable by Europeans. Agriculture is practiced by the natives, who raise cotton, cacao, corn, cassava, yams, etc. From the Niger delta come the palm oil and palm kernels, which constitute the main exports. The forests also yield rubber and mahogany. In 1912 the export of palm kernels was 184,625 tons, valued at £2,797,411; palm oil, 1,539,883 hundredweights, £1,654,933; rubber, 1,579,199 pounds, £125,022; cacao, 7,593,711 pounds, £130,542; cotton lint, 39,043 hundredweights, £102,931; cotton seed, 4058 tons, £10,030; mahogany, 15,565 logs, £78,006; corn, 157,979 hundredweights, £28,713. The total imports were valued in 1912 at £6,430,601, of which £4,398,368 were from the United Kingdom; exports, £6,089,706, of which £2,850,683 to the United Kingdom. Total tonnage entered and cleared, 1,656,913, of which 925,611 tons British. Revenue, 1912, £2,235,412; expenditure, £2,110,498.

Railways. On Jan. 1, 1913, the amalgamation of the Lagos and the Baro-Kano railways was accomplished. The Lagos Railway was opened in March, 1901, and extended from Iddo Island (the southern terminus, connected by bridges with the mainland and with Lagos Island) to Ibadan, a distance of 123½ miles; further construction extended the line to Jebba in Northern Nigeria, a distance of 182¾ miles. The line was extended from Jebba to Minna, a point about 25 miles beyond Zungeru, a distance of 145 miles. There it connects with the Baro-Kano Railway, which was constructed from Baro on the Niger to Kano, a distance of 356 miles, by the Northern Nigeria government, and opened to traffic March 29, 1911. In 1911 a narrow-gauge road was begun from Zaria to the Bauchi region, and was completed as far as Rahama in March, 1912, a distance of 88¼ miles. The Nigerian railways had a prosperous year in 1913 with increased earnings and traffic. This made necessary additional rolling stock and orders for new locomotives were placed.

Administration. The office of governor and commander-in-chief of the colony was constituted by letters patent of the 29th of November, 1913; and provision was made for executive and legislative councils. The executive council will have consultative powers regarding both colony and protectorate; the legislative council, with power to establish ordinances subject to veto by the Governor, has jurisdiction in the colony alone. Governor-General and Commander-in-Chief in 1914, Sir F. J. D. Lugard; political secretary and personal assistant to the Governor, Maj. E. J. Lugard.

NILES, William Woodruff. An American Bishop of the Protestant Episcopal Church, died March 31, 1914. He was born in Hatley, Quebec, in 1832, and graduated from Trinity College in 1857, afterwards studying theology, and graduating from the Berkeley Divinity School in 1861. In the following year he was ordained priest. After serving from 1861 to 1864 as rector at Wiscasset, Me., he became professor of Latin language and literature at Trinity College. From 1868 to 1870 he was rector at Warehouse Point, Conn., and in the latter year was consecrated Bishop of New Hampshire. For a time he was joint editor of the *Churchman* and was a member of the commission for revising the prayer book, revising marginal readings in the Bible, and for revising the lectionary of the Church. He received degrees of S.T.D. and LL.D. from Trinity College, D.D. from Dartmouth College, and D.C.L. from Bishops College, Quebec.

NISBET, John. A British forester, died in London in 1914. He was born in Edinburgh, Scotland, on Oct. 2, 1853, was educated at the Edinburgh Institution and University, and at Munich University, where he studied forestry and took the degree of doctor in national economy. He entered the Indian forest service in 1875; was appointed conservator of forests, Burma, in 1895, and retired in 1900. After returning to England, Nisbet was appointed lecturer in forestry at the West of Scotland Agricultural College, was professor of forestry therein in 1908–12, and in 1912 became forestry adviser to the Board of Agriculture for Scotland. He made a thorough study of British and Continental forestry, and did much to arouse popular British interest in the subject. In 1903 he was decorated at the Delhi Durbar with the Kaiser-i-Hind gold medal for public service in

India. He published: *British Forest Trees* (1893); *Protection of Woodlands* (1893); *Essays on Sylvicultural Subjects* (1893); *Studies in Forestry* (1894); *Burma Under British Rule* (1901); *The Forester* (1905); *Our Forests and Woodlands* (1908); and *The Elements of British Forestry* (1911).

NITROGEN. See FERTILIZERS.

NIXON, SIR CHRISTOPHER JOHN. An Irish physician and educator, died July 19, 1914. He was born in Dublin in 1849 and educated at Trinity College, Cambridge. He was at various times president of the Royal College of Physicians of Ireland, professor of medicine at the Catholic University, member of the General Medical Council, honorary fellow of the British Institute of Public Health, vice-chancellor of the Royal University of Ireland, and also first president of the Royal Veterinary College of Ireland. His published writings on medical subjects include: *Handbook of Hospital Practice and Physical Diagnosis;* various papers on *Diseases of the Heart and Nervous System*, etc. He was created a knight in 1895 and baronet in 1906.

NOBEL PEACE PRIZE. See INTERNATIONAL ARBITRATION AND PEACE.

NOBEL PRIZES. See INTERNATIONAL ARBITRATION AND PEACE, section *The Nobel Prize for 1914*.

NORDICA, LILLIAN (LILLIAN NORTON YOUNG). An American prima donna, died May 10, 1914. She was born in Farmington, Me., in 1857, and while she was still a young girl her voice gave such promise that her parents felt justified in sending her to Boston where her first lessons in singing were taken at the New England Conservatory of Music; here she received instruction in oratorio singing, a field of music in which she always excelled. In 1875 she secured a position as soprano in Grace Church in Boston, and two years later she filled a corresponding place in a church in Roxbury. Her first public appearance was made in 1876 at a pupils' concert in Boston, and in the same year she had made progress enough to be included with such well-known singers as Myron W. Whitney and Matilde Phillips. In 1878 she was engaged by Patrick Gilmore as a soloist for his band, which she accompanied to Europe where she sang in Paris at the Trocadero. It was at this time that she first determined to become an opera singer and went to Milan, then the centre of operatic study for American girls, where she spent two years under San Giovanni. She then made her operatic début under the management of Chevalier Scovel, the American tenor, who was the impresario as well as leading tenor in a small theatre in Brescia. On this occasion she sang the part of Violetta in *La Traviata*, which became one of the best rôles of her earlier period. Later in the same period she appeared as Marguerite in *Faust*, in Genoa, and as Alice in *Robert le Diable*, in Novaro. Following this she went to Russia for a season and sang for two years in succession, appearing in secondary parts in performances given by an Italian opera company.

In 1883 she was in the company at the Opera in Paris, and there was heard by Colonel Mapleson, who engaged her to come to the United States in 1885. She sang in New York at the Academy of Music, but she was not well enough known to make a deep impression upon American audiences, and after a few appearances she returned to Europe. In the same year she was married to Fred Gower, who was killed in a balloon accident several years later. After singing at Covent Garden in London, she was engaged by Maurice Grau to appear with Tamagno, and she also sang much in concert and oratorio. In 1891 she returned to the United States and sang several times at the Metropolitan Opera House, although not as a regular member of the company. Among other rôles she filled was that of Elsa, and in this she made so favorable an impression that in 1892 she went to Bayreuth and studied the rôle with Mme. Wagner. She sang this rôle at Bayreuth with great success. She had been gradually dropping the coloratura rôles from her repertoire, but it was not yet evident that her greatest triumphs were to be not only as a dramatic soprano, but as a Wagnerian singer. This was made secure when on Nov. 27, 1895, she appeared for the first time as Isolde at Munich at the opening of the new opera house; her triumph on this occasion being one of the most remarkable in the history of the opera. She later added other Wagnerian rôles to her repertoire with equal success. During the season of 1896 she sang in the United States in concerts but was not a member of the Metropolitan Opera Company, on account of differences with Maurice Grau, at that time the director. They were afterwards reconciled and she remained in the Metropolitan Opera Company during his management, and later sang under Heinrich Conried. Among important rôles performed during her engagement with Mr. Conried was Kundry in *Parsifal*.

On the establishment of the Manhattan Opera House in New York City she became a member of the company, but she and Oscar Hammerstein, the director, were not able to agree, and they parted. Following this she made one appearance at the Metropolitan Opera House in *Tristan und Isolde*, and in Berlin. Boston, and Chicago in the same opera. In 1913 she made a tour of Australia and New Zealand, and on Dec. 28, 1913, the steamer *Tasman*, on which she was a passenger, went ashore off Thursday Island. From exposure incurred at this time Madame Nordica contracted pneumonia, from which she died at Batavia, Java. In 1897 she was married to Zoltan Doehme, a young Hungarian, but divorced him in 1906 and in the same year married George W. Young, a banker in New York City.

NORTH CAROLINA. POPULATION. The estimated population on July 1, 1914, was 2,339,452. The population in 1910 was 2,206,287.

AGRICULTURE. The area, production. and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	2,835,000	57,500,000	$49,493,000
	1913	2,835,000	55,282,000	48,648,000
Wheat	...1914	611,000	7,882,000	8,578,000
	1913	605,000	7,078,000	7,503,000
Oats	1914	250,000	4,375,000	4,844,000
	1913	280,000	4,485,000	2,736,000
Rye	1914	46,000	460,000	483,000
	1913	46,000	475,000	465,000
Rice	1914	150	4,000	3,000
	1913	800	7,000	6,000

		Acreage	*Prod. bu.*	*Value*
Potatoes	.1914	33,000	1,716,000	1,579,000
	1913	30,000	2,400,000	1,968,000
Tobacco	..1914	320,000	*a* 368,000	4,114,000
	1913	320,000	419,000	4,563,000
Cotton	...1914	1,600,000	*b* 950,000	31,248,000
	1913	1,576,000	793,000	47,608,000

a Pounds.
b Bales.

Mineral Production. The mineral production of the State in 1913 was valued at $3,739,696, an increase of $370,773 over 1912. North Carolina is the leading producer of mica, which is chiefly used in the manufacture of gas lamp shades and for glazing heating stoves. The mica produced in 1913 was valued at $267,913, compared with $256,549 in 1912. Other mineral products of the State are monazite, clay products, granite, limestone, marble, sandstone, gold, copper, lead, silver, zinc, iron, talc, barytes, mineral waters, sand and gravel, and silica.

Transportation. There were on Jan. 1, 1913, 4799 miles of steam railroad in the State. The Raleigh, Charlotte, and Southern Railway was absorbed during the year by the Norfolk Southern.

Education. The total school population in the school year 1913–14 was 778,283, of which 525,107 were white and 253,276 colored. The enrollment in the schools for white children was 409,728 and for colored children 189,919, the average daily attendance for white children being 288,834 and for colored children 119,630. There were 10,082 white teachers and 3173 colored teachers. The average annual amount paid to each white teacher was $271.36 and to each colored teacher $153.57. The total value of all school property was $9,078,703, and of this, the school property for white children was valued at $8,056,966 and for colored children at $1,021,736. There were 5427 rural white schools and 2318 colored rural schools. The total number of rural high schools was 212, in which there were 406 teachers and an enrollment of 8316 pupils. The total expenditures for schools in 1914 was $5,566,992, an increase of $1,488,872 over 1912.

Charities and Corrections. There were under the control of the State in 1914 the following institutions: Hospitals at Morganton, Raleigh, and Goldsboro; at Raleigh, Epileptic Colony, School for the Blind, School for the Colored Blind and Deaf, Soldiers' Home, and the State Prison; School for the White Deaf at Morganton; Jackson Manual Training and Industrial School at Concord; and Orphanage for White Children, and Orphanage for Colored Children at Oxford.

Finance. The report of the State Treasurer shows a balance on Dec. 31, 1913, of $337,678. The total receipts for the fiscal year were $5,150,107 and the disbursements $4,980,305, leaving a balance at the end of the year of $169,802. The total bonded debt of the State on Dec. 31, 1914, was $8,673,600.

Politics and Government. There was no meeting of the State Legislature in 1914, as the sessions are biennial and the last was held in 1913. Senator Overman, whose term expired on March 4, 1915, was a candidate for reëlection and was nominated at the State convention held on June 4. At this convention an effort was made to incorporate an initiative and referendum plank in the platform, but the committee refused to do this and was upheld by the convention. For the first time in the history of the State a suffrage resolution was offered in the State convention, but it was supported only by the delegate who introduced it. A plank favoring State-wide primaries was voted down by 572 to 268. The Progressive element of the party appealed for the adoption of the plank, urging that it was supported by Mr. Bryan, Josephus Daniels, and President Wilson, quoting a letter written by the latter in which he lamented the lack of a primary law in the State. The Republicans nominated for United States Senator A. A. Whitener, but the Progressives had no candidate. In the election of November 3, Senator Overman was reëlected, receiving 121,241 votes to 87,095 for Whitener, Republican. The Democrats elected representatives to Congress in all districts but one. The total vote cast in the election was 208,336, compared with 243,918 in 1912. The Democratic vote showed a falling off of about 20,000, and the Republican an increase of about 20,000. Some comment was caused in the United States Senate in June by the introduction of letters, in favor of a gold-mining scheme in North Carolina, written on the stationery of the United States Senators from that State, and practically identifying them with the exploitation of the mine, but on investigation Senators Chilton and Overman were exonerated from all blame.

State Government. Governor, Locke Craig; Lieutenant-Governor, E. L. Daughtridge; Secretary of State, J. B. Grimes; Treasurer, B. R. Lacy; Auditor, W. P. Wood; Attorney-General, T. W. Bickett; Superintendent of Education, J. Y. Joyner; Commissioner of Agriculture, W. A. Graham; Commissioner of Insurance, J. R. Young—all Democrats.

Judiciary. Supreme Court: Chief Justice, Walter Clark, Democrat; Justices, George H. Brown, Democrat; William A. Hoke, Democrat; William R. Allen, Democrat; P. D. Walker, Democrat; Clerk, L. Seawell, Democrat.

State Legislature, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	47	104	151
Republicans	1	6	7
Progressives	2	10	12
Democratic majority	44	98	132

The representatives in Congress will be found in the section *Congress*, article United States.

NORTH CAROLINA, University of. A State institution for higher education, founded at Chapel Hill, N. C., in 1793. The total enrollment in all departments of the university in the autumn of 1914 was 981, divided as follows: Graduates, 58; undergraduates, 692; law, 111; medicine, 81; pharmacy, 55. There were 85 members in the faculty. The most notable change in the faculty during the year was the election of E. K. Graham as president of the university, to succeed F. P. Venable, resigned. A new athletic field was given by Isaac Emerson, of Baltimore, Md. The productive funds amount to $181,300, and the annual income to about $140,000. The library contains 70,000 volumes.

NORTH DAKOTA. Population. The estimated population on July 1, 1914, was 686,966. The population in 1910 was 577,056.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	500,000	14,000,000	$8,120,000
	1913	875,000	10,800,000	5,616,000
Wheat	1914	7,285,000	81,592,000	82,408,000
	1913	7,510,000	78,855,000	57,564,000
Oats	1914	2,818,000	64,904,000	24,014,000
	1913	2,250,000	57,825,000	17,348,000
Rye	1914	131,000	2,240,000	1,882,000
	1913	125,000	1,800,000	810,000
Barley	1914	1,450,000	28,275,000	12,724,000
	1913	1,275,000	25,500,000	10,200,000
Potatoes ..	1914	70,000	7,630,000	3,205,000
	1913	60,000	5,100,000	2,856,000
Hay	1914	400,000	*a* 580,000	3,016,000
	1913	840,000	388,000	2,250,000

a Tons.

MINERAL PRODUCTION. North Dakota has little importance as a mineral producer. The total value of the mineral output in 1913 was a little more than $1,000,000, nearly three-fourths of which was the value of lignite coal, and the other one-fourth was largely made up by the value of the clay products. The lignite has been found to make excellent fuel for industrial purposes, and it can be used as a domestic fuel in the form of briquets. The only mine operated by the United States government is on one of the lignite beds of North Dakota. The area underlain by lignite is larger than the total coal area of any other State, with the exception of Illinois and Montana. The production decreased from 499,480 short tons, valued at $765,105, in 1912, to 495,320 short tons, valued at $750,652, in 1913. The total value of the mineral products in 1913 was $1,055,676, compared with $1,025,741 in 1912.

TRANSPORTATION. In 1914 the total railway mileage of the State, including main lines, secondary main lines, and branch lines was 6141. The roads having the longest mileage of main track are the Northern Pacific, 377; Great Northern, 426; Minneapolis, St. Paul, and Sault Ste. Marie, 361; and the Chicago, Milwaukee, and St. Paul, 102. During 1913–14 the Minneapolis, St. Paul, and Sault Ste. Marie extended its track to the Montana State line, a distance of 28 miles. The Great Northern constructed a branch from Snowden, Mont., to Fairview, N. Dak., and thence to Watford, a distance in North Dakota of 45 miles. The Northern Pacific branch, north from Mandan, reached Killdeer, a distance of 98 miles from Mandan, in the fall of 1914.

EDUCATION. There were in the State on June 30, 1913, 171,872 children of school age, the total enrollment being 142,434, and of these 72,552 were boys and 69,882 were girls. There were 1974 organized school districts, containing 464 graded schools, the total number of schools in the districts being 5298. There were 222 high schools. The total number of men teachers was 1267 and of women teachers 6624, the average monthly salary of men teachers being $71.30 and of women teachers $54.20.

FINANCE. The report of the State Treasurer for the fiscal year ending June 30, 1914, shows a balance on hand at the beginning of the year of $1,983,675. The total receipts for the fiscal year were $5,387,226, and the total expenditures were $5,737,485, leaving a balance on hand on June 30, 1914, of $1,633,417; on the same date the total funded debt of the State was $662,300. In 1912 the indebtedness was $937,300. The funded debt consists of several series of negotiable bonds. One issue of $106,000 represents territorial bonds, assumed as North Dakota's portion of the territorial debt of Dakota under the provision of the joint commission's report, which was adopted by the people of North and South Dakota.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the State Penitentiary, State Hospital for the Insane, State Industrial School, State Institutions for Feeble-Minded, School for the Deaf, State Reform School, and the State School for the Blind. These institutions are under the management of the State Board of Control with headquarters at Bismarck. The Soldiers' Home at Lisbon is not under the control of this board.

POLITICS AND GOVERNMENT. There was no session of the State Legislature in 1914 as the sessions are biennial and the last was held in 1913. Elections were held for Governor and for United States Senator. Governor Hanna and Senator Gronna were both renominated in the primaries held on June 24. The Democrats nominated for Governor F. O. Hellstrom, and for United States Senator W. E. Purcell. The Progressives nominated for Governor H. H. Asker, and for Senator S. Serumgard. In the elections held on November 3 the Republicans were successful, reëlecting Governor Hanna by a vote of 44,278 to 34,746 for Hellstrom, Democrat, and 4263 for Asker, Progressive. Senator Gronna was reëlected with a vote of 48,732, compared with 29,640 for Purcell, Democrat, and 2707 for Serumgard, Progressive. The total vote cast was 89,306, compared with 86,580 in the presidential election of 1912. The Republican vote showed an increase of about 4500, the Democratic vote an increase of about 3500, and the Progressive vote a loss of about 5000. The Republicans elected all representatives to Congress.

STATE GOVERNMENT, 1915. Governor, L. B. Hanna; Lieutenant-Governor, J. H. Fraine; Secretary of State, Thomas Hall; Treasurer, John Steen; Auditor, Carl O. Jorgenson; Attorney-General, H. J. Linde; Superintendent of Education, E. J. Taylor; Commissioner of Agriculture, Robert F. Flint; Commissioner of Insurance, W. C. Taylor—all Republicans.

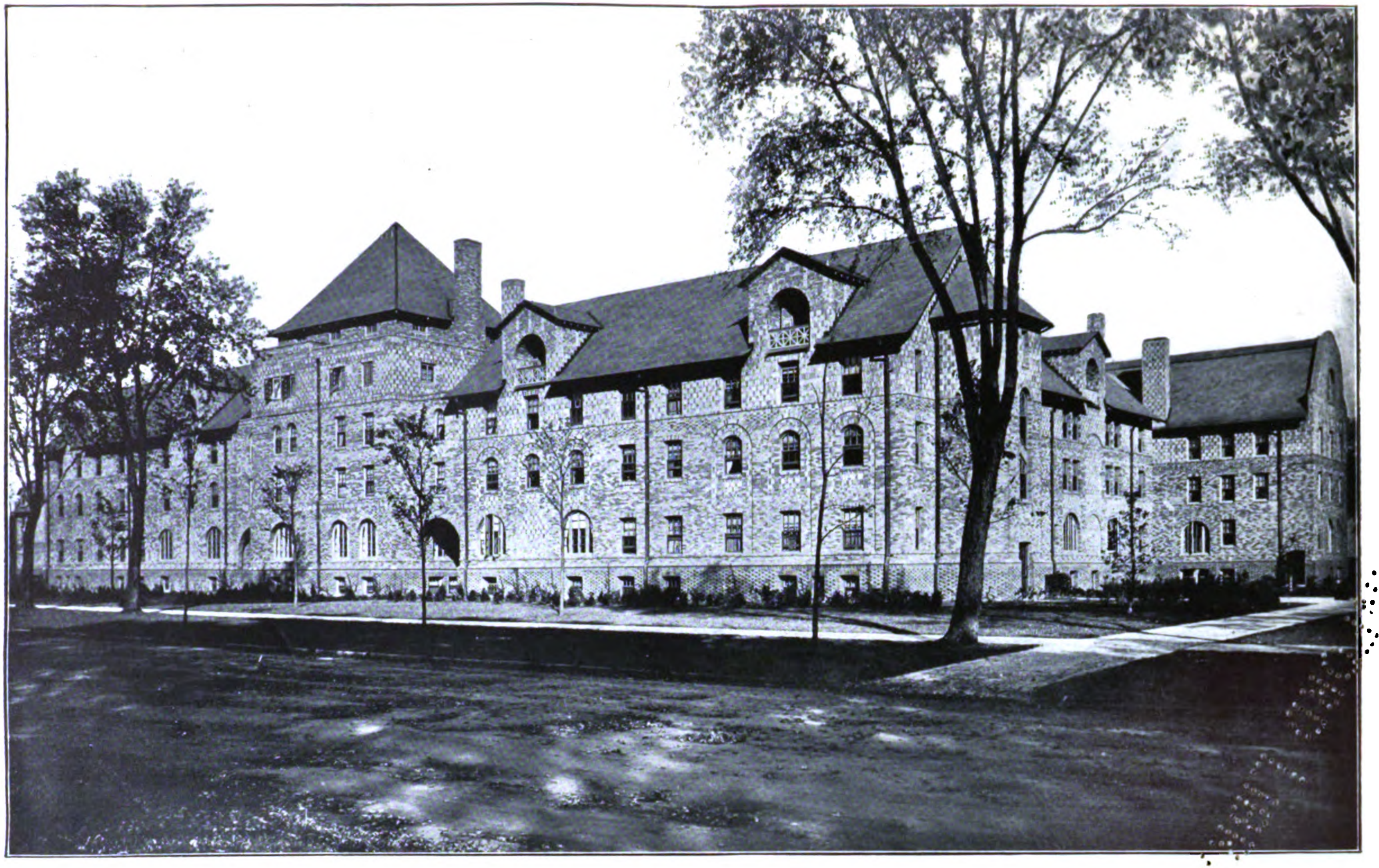
JUDICIARY. Supreme Court: Chief Justice, B. F. Spalding; Justices, Chas. J. Fisk, E. T. Burke, E. B. Goss, A. A. Bruce; Clerk, R. D. Hoskins—all Republicans, except Fisk.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	44	103	147
Democrats	6	8	14
Republican majority	38	95	133

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

NORTH DAKOTA, UNIVERSITY OF. A State institution for higher learning, founded at Grand Forks, in 1883. The total enrollment in November, 1914, was 740, of whom 258 were in the college of liberal arts, 157 in the school of education, 81 in the engineering colleges, 59 in the school of medicine, 87 in the school of law, 6 in the graduate school, and 92 in the model high school. The faculty numbered 80. During the year Melvin Brannon, formerly dean of the college of liberal arts, resigned to become



NORTHWESTERN UNIVERSITY

FACADE OF BUILDINGS ON SHERIDAN ROAD, EVANSTON, ILL.
PALMER, HORNBOSTEL, AND JONES, ARCHITECTS

president of the University of Idaho. He was succeeded by Professor Vernon P. Squires. Dean Robert L. Henry, Jr., of the law school has been superseded by Dean George F. Wells. The productive funds of the university amount to about $1,705,761, and the income to about $230,000. The library contains 55,000 volumes. The president is Frank L. McVey, Ph.D., LL.D.

NORTHERN NIGERIA. See NIGERIA, COLONY AND PROTECTORATE OF.

NORTHWESTERN UNIVERSITY. An institution for higher education, founded at Evanston, Ill., in 1851. The total number of students enrolled in all departments of the university in the autumn of 1914 was 5100, and the faculty numbered 503, including 41 trustees and 33 officers of administration. There were several notable changes in the faculty during the year. These included the addition of William Bebb, professor of comparative anatomy; Elmer Ellsworth Jones, Ph.D., professor of education; Frederick James Murphy, athletic coach; Joseph Ezekiel Pogue, Ph.D., associate professor of geology and mineralogy; and the resignation of Dr. George Amos Dorsey, professor of comparative anatomy. There were several noteworthy benefactions received during the year, including a gift of $1,000,000 to Wesley Hospital and Northwestern University Medical School by James Deering, and one of $250,000 from Norman W. Harris for a Hall of Political Science. The productive funds of the university in 1913–14 amount to $4,438,132, and the annual income from all sources, including student fees, amounts to $1,389,521. The library contains 184,000 volumes. The president is A. W. Harris, LL.D.

NORTHWEST TERRITORIES. See CANADA, section *Area and Population*.

NORWAY. A constitutional monarchy of northern Europe, occupying the western portion of the Scandinavian peninsula.

AREA AND POPULATION. In the table below are given land area, total area including fresh waters, rural population (*de facto*), according to the census of Dec. 31, 1910, and total population:

	Sq. km.	*Sq. km.*	*R. pop.*	*T. pop.*
Smaalenene	3,869.51	4,144.14	103,904	150,690
Akershus	4,903.11	5,285.30	126,660	129,823
Christiania	16.82	16.55	....	242,850
Hedemarken	26,288.19	27,480.47	125,840	133,685
Christians	24,130.62	25,275.36	110,895	118,901
Buskerud	14,015.73	14,816.87	89,748	123,863
Jarlsberg and Larvik	2,244.63	2,319.58	66,887	103,333
Bratsberg	14,149.28	15,189.09	76,649	106,791
Nedenes	8,772.22	9,348.00	58,429	71,272
Lister and Mandal	6,881.17	7,264.24	54,948	77,237
Stavanger	8,671.64	9,147.15	79,645	137,581
Söndre Bergenhus	15,104.51	15,606.40	141,613	141,618
Bergen	13.08	13.55	....	75,888
Romsdal	14,591.06	14,990.14	110,126	143,102
Norde Bergenhus	17,826.41	18,481.51	87,586	88,934
Söndre Trondhjem	17,814.65	18,612.37	101,087	147,348
Nordre Trondhjem	21,100.48	22,495.14	78,002	84,640
Nordland	37,178.34	38,646.07	149,567	161,105
Tromsö	25,710.40	26,246.05	70,459	80,554
Finmarken	46,406.92	47,580.84	31,210	39,126
Total	309,683.22 *	322,908.82 †	1,657,695	2,357,790

* 119,549 square miles. † 124,675 square miles.

The total (*de jure*) population Dec. 31, 1910, numbered 2,391,782; 1912, 2,427,331. Of the total (*de facto*) population in 1910, 1,123,160 were males and 1,334,630 were females. Engaged in agriculture and allied industries were 898,259; fisheries, 134,685; mines, furnaces, etc., 247,077; manufactures, 238,722. The marriages in 1912 numbered 14,800 (14,826 in 1911), living births, 60,900 (61,468), deaths, 32,100 (31,278). In the following list of cities the (*de facto*) population is given, with the (*de jure*) population in parentheses. Christiania, 242,850 (241,834); Bergen, 75,888 (76,867); Trondhjem, 46,256 (45,335); Stavanger, 36,621 (37,261); Drammen, 24,937 (24,895); Fredrikstad, 15,481 (15,597); Christiansand, 15,408 (15,291); Christiansund, 15,891 (13,201); Aalesund, 14,785 (13,858); Skien, 12,099 (11,856); Fredrikshald, 12,023 (11,992); Sarpsborg, 10,018 (9846).

EDUCATION. Primary schools are maintained by local taxation assisted by state grant. Instruction is compulsory between the ages of 6 or 7, and 14. There are state, communal, and private secondary schools, and special, technical, and industrial institutions; there is a university at Christiania.

The majority of the people are Lutherans (2,329,229 in 1910 belonging to the state church and 15,277 to the Free Lutheran); Methodists numbered 10,986. With the exception of Jesuitism, all creeds are tolerated.

PRODUCTION. Of the total area, only about one-thirtieth is fit for cultivation; about one-third is under forest; the remainder is uncultivated pasture, barren table-lands, and uninhabitable mountains. There is a large import of cereals and meats for home consumption, as the home supply does not meet the demand. In the table below are shown areas devoted to the principal crops and production for two years, with yield per hectare in 1912–13 (figures for 1913–14 are subject to revision):

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*ha.*
Wheat	5,061	5,024	88,212	....	17.6
Rye	15,055	15,068	246,970	....	16.4
Barley	35,917	36,182	783,534	....	20.4
Oats	106,279	109,105	1,984,827	....	18.7
Potatoes	41,114	42,021	7,042,401	....	171.1

The 1912 hay crop was 3,129,768 tons, valued at 140,839,600 kroner. The total cereal crop for 1912 was valued at 47,328,200 kroner, potatoes, 48,324,500 kroner; the total value of all crops was given at 236,492,300 kroner. The import of wheat in 1912 was 95,617 metric tons; of rye, 268,106; barley, 91,912; oats, 15,522; peas and beans, etc., 4091; corn, 32,794.

The 1910 live stock census on farms returned 167,714 horses, 1,133,613 cattle, 1,398,383 sheep, 287,686 goats, and 333,709 swine. Reindeer (1907), 142,623, fowls, 1,391,347, ducks, 8230, geese, 9670, turkeys, 2961, beehives, 20,223. There were (1910) 742 cheese and condensed milk factories and creameries, employing 1021 men and 1710 women; production of butter, 3,707,231 kilos, and of cheese, 7,796,739 kilos.

Employed in the cod fisheries in 1912 were 21,211 boats and 94,281 fishermen. Production of cod, 99,303,000; of livers, 224,267 hectoliters; of roe, 55,198 hectoliters. Total value of output from cod fisheries, 26,718,000 kroner. Total output of the herring fisheries, 2,720,000 hectoliters, valued at 12,502,000 kroner.

The mines employed 6246 persons in 1910, and 5987 in 1911; value of output from the mines, 1911, 12,829,000 kroner. At the end of 1911 there were 6077 industrial establishments, employing 136,025 work people and 779,840 horsepower.

COMMERCE. The imports and exports for three successive years are given below in kroner:

	1910	*1911*	*1912*
Imports	429,228,800	495,749,100	560,804,100
Exports	309,730,400	325,406,900	370,741,500

Exports of Norwegian produce amounted to 267,856,800 kroner in 1910, to 288,684,100 in 1911, and to 324,622,600 in 1912. The table below gives imports for consumption and exports of domestic produce by great classes for two comparative years, in thousands of kroner.

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
Live animals	2,818,200	2,840,700	218,800	203,600
Animal products	18,141,000	12,533,300	103,978,800	109,069,300
Cereals	66,649,400	62,512,900	3,690,400	2,511,000
Col. products	40,590,400	40,116,700	156,500	471,800
Fruits and vegetables	9,723,500	10,968,400	257,100	234,200
Beverages	8,207,100	9,847,800	154,200	139,200
Textiles	18,664,600	18,293,700	584,800	701,400
Yarns, etc.	11,990,200	18,887,100	556,600	718,300
Fabrics	37,437,400	43,520,600	711,400	778,100
Animal by-products	19,389,500	23,726,700	19,203,000	26,957,400
Animal, other products	1,481,800	2,094,800	306,100	355,600
Oils, etc.	29,459,000	36,370,900	12,773,500	14,992,100
Other fats	2,978,400	3,554,200	534,200	717,300
Timber	12,280,900	12,149,500	34,188,200	32,262,500
Wooden wares	1,484,800	2,520,000	43,870,400	54,518,500
Dyestuffs	2,734,500	3,283,100	510,800	646,200
Other vegetables	10,094,000	10,297,300	280,700	430,800
Paper, etc.	2,815,600	3,137,800	21,042,600	25,366,200
Various	1,158,900	1,290,700	58,800	44,800
Minerals	41,085,100	58,527,900	12,775,300	17,458,400
Mineral mfrs.	5,454,000	6,048,300	13,274,000	16,769,600
Metals	27,200,600	35,016,900	10,657,500	12,563,900
Metal mfrs.	29,726,600	37,287,600	2,226,500	2,100,900
Machinery, etc.	68,178,700	71,154,100	5,562,100	5,657,900
Unclassed	9,005,800	10,353,700	1,116,800	773,600
Total	468,695,000	525,735,200	288,684,100	324,622,600
Transit	27,054,100	35,068,900	....	....
Grand total	495,749,100	560,804,100	288,684,100	324,622,600

Some of the principal countries of origin and destination follow, with the value of their trade in 1912 in thousands of kroner: Germany, 167,956 imports and 75,019 exports; United Kingdom, 147,994 and 94,832; Sweden, 70,401 and 21,434; Russia, 21,602 and 11,803; Finland, 1846 and 1006; United States, 33,807 and 33,432; Denmark, 26,995 and 8441; France, 14,075 and 14,687; Netherlands, 20,382 and 18,155; Belgium, 16,233 and 13,334; Spain, 5141 and 11,364; Italy, 3666 and 9875; Austria, 1727 and 1247; Hungary, 179 and 130; Rumania, 5302 and 255.

Total vessels entered at Norwegian ports in 1912, 11,059, of 5,426,162 tons; cleared, 10,971, of 5,379,888. The merchant marine included Jan. 1, 1913, 1106 sail, of 632,989 tons; steam and motor, 2126, of 1,085,617 tons—a total of 3232 vessels, of 1,718,606 tons.

COMMUNICATIONS. Total length of railways open to traffic in 1913, 3097 kilometers. State telegraph lines, 11,622 kilometers, with 22,519 kilometers of wire and 1786 stations. Telegraph receipts for 1912–13, 7,278,197 kroner; expenditure, 5,307,776 kroner. Post offices, 3562. Postal receipts for 1912–13, 10,272,561; expenditure, 9,331,148 kroner.

FINANCE. The unit of value is the kroner, worth $0.268. In the table below are shown revenue and expenditure somewhat detailed for four successive years, in thousands of kroner:

Revenue:	*1908-9*	*1909-10*	*1910-11*	*1911-12*
Direct taxes	8,712	9,857	9,767	10,312
Indirect taxes	67,615	56,529	59,610	62,954
Other taxes	59,251	50,291	53,958	61,604
Total	144,588	122,244	128,279	140,730
Expenditure:				
Defense	22,029	19,508	19,270	21,093
Debt	19,920	15,462	15,374	17,176
Public works	41,205	34,416	35,855	41,634
Other	54,114	47,365	50,406	53,029
Total	137,268	116,751	120,905	132,932

Total revenue and expenditure for 1911–12 amounted to 140,730,210 and 132,932,368 kroner respectively; for 1912–13, 160,675,487 and 153,005,623 kroner. The budget for 1913–14 balanced at 159,702,100 kroner, and the budget for 1914–15 at 154,900,000 kroner.

The public debt stood June 30, 1913, at 362,743,499 kroner (148.30 per capita). Of this total, 21,952,795 represented the internal, and 340,790,704 the external, debt.

NAVY. The active fleet in 1913 included 4 coast-defense vessels of 16,300 aggregate tons; 2 monitors, of 3500; 3 first-class gunboats, 3250; 8 second-class gunboats, 2270; 2 torpedo-boat destroyers, 1100; torpedo despatch boat, 410; 10 first-class torpedo boats, 1020; 27 second-class torpedo boats, 1840; 1 third-class torpedo boat, 30; 1 submarine, 200. There were building in 1913, 4 submarines, a torpedo boat destroyer, and 1 torpedo boat.

ARMY. The Norwegian army consists of 3 lines, the ligne or active army, in which there is a period of 12 years' service, and the landvaern, or second line, with 8 years' service, and the landsturm, in which citizens are enrolled until 50 years of age. Service is universal and compulsory, but the annual contingent is not sufficiently large to make the service onerous, and the actual service varies from 144 days for the infantry to 198 days in other branches of the service. The active army is maintained on a skeleton or cadre basis, so that while 9000 or 10,000 men are under arms, except at training seasons, yet men may be called to the colors so that a field army estimated at 30,000 may be available for service beyond the frontier at short notice. A total armed strength of 70,000 could be mobilized and the machinery for so doing involves the division of the kingdom into 10 divisions for recruitment, at the head of which are retired officers, and each division in turn is specially divided so that each special division can furnish from 3 to 6 battalions.

GOVERNMENT. The King is the executive, acting through a council of state, whose members are responsible heads of departments. The legislative body is the representative Storthing, made up of the Lagthing and the Odelsthing. The reigning King in 1914 was Haakon VII, son of the late King Frederick VIII of Denmark. Heir-apparent, Prince Olaf, born July 2, 1903.

HISTORY. The budget, presented to the Storthing in January, called for an extraordinary expenditure of 15,081,000 kroner ($4,041,708), in addition to the ordinary expenditure of 154,900,000 kroner ($42,513,200). The ordinary expenditures alone showed an increase of 12,880,000 kroner, of which 1,000,000 kroner was absorbed by the army and 700,000 by the navy. A National Exposition was opened at Christiania on May 15 in commemoration of the centenary of the Constitution. A bill to deprive the King of the right to propose a successor to the throne in the absence of a direct heir, was defeated in the Storthing, receiving only 41 votes. Early in August Gen. H. V. D. Keilhau resigned his post in the cabinet as minister of defense, alleging that his feeble health would not stand the increased strain of arduous duties which the outbreak of the War of the Nations naturally imposed upon the defense department of even a neutral country. Gen. C. T. Holtfodt succeeded to the portfolio of defense. In November a loan of $4,000,000 was issued to cover the extraordinary military expenses. With regard to the neutrality agreement with Sweden and Denmark, see SWEDEN. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

NORWEGIAN LITERATURE. See SCANDINAVIAN LITERATURE.

NOVA SCOTIA. A maritime province of the Dominion of Canada. Area, 21,428 square miles, with a population (1911) of 492,338. The capital is Halifax, with (1911) 46,619 inhabitants. The executive authority rests with a Lieutenant-Governor, appointed by the Governor-General of Canada and acting through a responsible executive council. A Legislative Council of 21 appointed members, and a House of Assembly of 38 elected members, compose the Legislature. The Lieutenant-Governor in 1914 was James Drummond McGregor, appointed Oct. 18, 1910. Premier in 1914, G. H. Murray.

A bill to prohibit the sale of liquor in the city of Halifax was defeated by one vote in the Legislature, after Mr. Murray, the Premier, had argued that prohibition would only make matters worse in the city. The question as to how far a legislature may go in maintaining its privileges was brought to the fore in a sensational manner when, on May 1, the Provincial Legislature of Nova Scotia committed W. R. McCurdy, editor of the *Halifax Herald*, to imprisonment for 48 hours, because he refused to divulge the name of an anonymous correspondent whose letter, alleging that the assembly had been bribed to pass a certain bill, was printed in the *Halifax Herald*. The indignant mayor of Halifax, however, taking the ground that the Legislature was violating the freedom of the press, addressed a large meeting in favor of McCurdy, and a band of the Royal Canadian Regiment, flying the Union Jack, serenaded the editor in jail. See also the article on CANADA.

NUTS. See HORTICULTURE.

NYASSALAND PROTECTORATE, THE. A British protectorate in central Africa, extending from German East Africa to Portuguese East Africa, and from Northeastern Rhodesia to Lake Nyassa. It covers an area of 39,801 square miles, containing a population, according to the estimate of March 31, 1913, of 758 Europeans, 356 Asiatics, and 1,020,537 natives. The capital is Zomba; the chief town is Blantyre, in the Shire Highlands. The cultivation of coffee, once the principal product for export, has declined, and cotton has taken its place, the export in 1912–13 being 8093 bales of 400 pounds. Tobacco cultivation is increasing, the export in 1912–13 being 2,262,545 pounds. Three-quarters of the trade is with the United Kingdom. Imports and exports, exclusive of goods in transit, were valued for 1912–13 at £276,989 and £228,140 respectively. The local revenue for 1912–13 amounted to £128,273; grant-in-aid, £5000; loan, £50,000; expenditure, £166,361. There is a railway from Port Herald to Blantyre, a distance of 113 miles. An extension from Port Herald to the Zambezi is under construction, and other branches to Beira and to Zomba and Fort Johnston are projected. The Governor, in 1914, was G. Smith, appointed September, 1913.

OATS. A general review of the world oats crop, published by the United States Department of Agriculture, calls attention to the fact that of the estimated world area of 144,000,000 acres, upward of 85 per cent is in northern and central Europe, the northern United States, and Canada. The area devoted to oats annually in Europe is about 85,000,000 acres, in the United States 38,500,000, and in Canada 10,500,000. Of the 85,000,000 acres in Europe, 43,000,000 are in Russia, 11,000,000 in Germany, 10,000,000 in France, 5,000,000 in Austria, 4,000,000 in the United Kingdom, 3,000,000 in the Scandinavian countries, and 1,000,000 in Belgium and the Netherlands combined. Asia reports an annual acreage of less than 7,000,000, mainly in Asiatic Russia, and South America devotes yearly only a little over 3,000,000 acres to oats, which is practically all produced in Argentina, Chile, and Uruguay. In Argentina and in fact in entire South America, the province of Buenos Aires is the principal producer. Since 1908 the acreage in this province increased from less than 1,000,000 to over 3,000,000 acres, and the production from 38,000,000 bushels to 69,000,000 in 1912, and to 116,000,000 in 1913. This province, now ranking second only to Russia in exports of oats, exported 61,000,000 bushels in 1912, and 59,000,000 in 1913. In Africa, oats culture is confined to the northern and southern portions of the continent, and in Australasia only a little more than 1,000,000 acres are grown annually.

Viewed from the standpoint of world production, the oats crop of 1914 was the most deficient among the cereals, and was less than 90 per cent of the record crop of 4,672,000 bushels of 1913. Although the production was reduced to this extent as compared with the preceding year, it was nevertheless above the decennial average for 1903–1912, as in the case of wheat, rye, and barley. The crop of 1914 in European Russia was estimated at 850,000,000 bushels, and in Asiatic Russia at 120,000,000 bushels, or a total of 970,000,000 bushels, in Prussia at 410,000,000, the United Kingdom 193,200,000, Hungary 90,500,000, Sweden 58,300,000, Belgium 49,750,000, and in Denmark at 46,450,000 bushels. The oats yield of Canada in 1914 was reported at 327,732,000 bushels, or 76,000,000 bushels less than in 1913.

The production of oats in the United States for the year, as reported by the Department of Agriculture, reached 1,141,060,000 bushels grown on an area of 38,442,000 acres, the average yield per acre being 29.7 bushels. The value of the crop based on a bushel value of 43.8 cents, the average price received by farmers December 1, was $499,431,000, the highest ever recorded. In 1913 the production was 1,121,768,000 bushels, the area 38,399,000 acres, the average yield 29.2 bushels per acre, and the total value $439,596,000. As reported by the American Agriculturist, Iowa and Illinois were the leading States with 162,327,000, and 108,000,000 bushels respectively.

OBERLIN COLLEGE. An institution for higher education, founded at Oberlin, Ohio, in 1833. The students enrolled in all departments in the autumn of 1914 were 1607, and the faculty numbered 157. There were no notable changes among members of the faculty during the year. The noteworthy benefactions included gifts of $50,000 from Dr. Dudley P. Allen and Mr. John L. Severance of Cleveland, toward a new art building; $25,000 from Mr. C. M. Hall, of Niagara Falls, N. Y., and Mr. F. N. Finney, of Pasadena, Cal., for a new pipe organ in the college chapel; and $35,000 from Mr. C. M. Hall, for campus improvement. The productive funds of the college amounted, at the end of the collegiate year, to $2,605,056, and the income to $124,353. The library contains about 145,000 bound, and 131,000 unbound volumes. The president is Henry C. King, D.D.

O'BRIEN, PETER, first BARON. An Irish jurist, died Sept. 7, 1914. He was born in Dublin in 1842 and was educated at Trinity College. In 1865 he was called to the bar, rapidly acquired a large practice, and was made second sergeant in 1885. He took part in many of the most important prosecutions in the difficulties following the organization of the Irish Land League. Although a Liberal in politics, he was unable to follow Mr. Gladstone in the latter's support of home rule, and when Mr. Balfour became Chief Secretary for Ireland in 1887 he offered to Mr. O'Brien the position of solicitor-general. In the following year he was promoted to be attorney-general and in 1889 became Lord Chief Justice of Ireland.

OBSERVATORIES. See ASTRONOMY, *New Observations.*

OCCUPATIONAL DISEASES. Lead poisoning in most of its phases is now recognized as one of the most widespread of occupational disorders. It has not, however, been suspected as a factor in the production of neurasthenia. But Hirsch, in a study based on considerable personal experience and the records of two painters' organizations, found that neurasthenia was a fairly common effect of chronic lead poisoning. He gives details of seven cases out of a large number in which lead was responsible for affections of the central nervous system, consisting mostly of subjective disturbances. Violent and long continued headache was the chief symptom in four cases, and morning vomiting in three. Patients become depressed, irritable, and timid. In some cases violent abdominal pains occur, which differ from lead colic.

The danger of asphyxia among workers in silos had become sufficiently important to obtain notice in agricultural bulletins. Sudden deaths had heretofore been attributed to heart failure, apoplexy, and the like, whereas the probable cause of death was asphyxiation from carbon dioxide. The first American silo for the preservation of fodder was built by Dr. Manly Miles in 1875. Since then the number of silos throughout the country has increased enormously and a great number of workers are in danger, unless certain precautions are taken. Hayhurst, Director of the Division of Occupational Diseases in the Ohio State Board of Health, and Scott cite four cases of sudden death in a single silo at one time. The victims were inmates of the Athens (Ohio) State Hospital, and had ascended the ladder on the outside of the silo to an open door about 12 feet from the top and jumped in one after the other. Within five minutes it was discovered by other workers that these four were unconscious, and in spite of hurried removal and prompt medical attention all attempts at resuscitation failed. Examination of the gases collected from the silo showed 38 per cent of carbon dioxide. According to Rambousek, 10 per cent of carbon dioxide in the air causes asphyxia. The remedy consists in thorough ventilation before workers, whose business it is to tramp down the silage, enter the silo and a free admission of air during their stay in it.

Poisoning from wood alcohol is not specifically mentioned as a hazard in the new employers' liability laws. Yet it is known to cause death or blindness, whether absorbed externally or inhaled. According to Tyson, in 1910, over 8,000,000 gallons were manufactured in the United States, and about 2,000,000 people are using it in various trades. According to 1904 census, the following industries and trades were using methyl alcohol. Painters, glaziers, and varnishers, 278,000; launderers, 386,000; boot and shoemakers, 206,000; barbers, 131,000; printers and lithographers, 155,000; woodworkers, piano and furniture polishers, 112,000 workers. In addition there are about 500,000 artisans who use wood alcohol, divided among dyers, brass-workers, cabinet-makers, gold and silver workers, harness-makers, hat-makers, leather-workers and tanners, metal-workers, photographers, book-binders, chemists, etc. The manufacturers assert that though commercial wood alcohol is poisonous, the refined product known as Colonial or Columbia Spirits is not; but investigators have proved that the refined spirit is as dangerous as the crude product. See ALCOHOL; PELLAGRA.

LEGAL STANDING. A new phase of the problems of labor as considered by the American public during the past few years, is the subject of diseases accompanying certain occupations. The American association for labor legislation has lead in the education of public opinion and in the scientific studies regarding such disease. As yet the result is that in 1911 and 1912 considerable legislation was enacted, increasing the safeguards of workers in those industries especially dangerous to health. The only phase of the subject affected by labor legislation in 1914, was the enactment by the province of Ontario providing compensation for diseases contracted during employment, as described below. Occupational diseases are due primarily to harmful substances, such as dusts, fumes, gases, vapors, acids, and organic germs; to the condition of the atmosphere, such as compressed or rarefied air, extremes of temperature or humidity; excessive or deficient light; or unusual fatigue. They are coming to be regarded as closely akin in their social aspects to industrial accidents, and therefore as a fit field for insurance. Under WORKMEN'S COMPENSATION, *Proposed Federal Law*, will be found a description of the latest United States' plan for meeting the evils of industrial diseases.

ONTARIO LAW. The first law enacted in America providing workmens' compensation for diseases contracted in the course of employment was enacted in the province of Ontario, Canada, in the spring of 1914. This law covered poisoning from lead, phosphorous, mercury, and arsenic, anthrax, and the miners' disease known as ankylostoniasis. This law had been preceded many years by similar legislation in Germany, Switzerland, and England.

FATIGUE. Much attention has been given in the last few years to the relation of fatigue to physical and mental disorders. In the United States Louis D. Brandeis and Miss Josephine Goldmark have compiled several volumes of evidence regarding the various effects of overstrain. These were used as the bases of briefs in connection with notable judicial decisions by courts in Oregon, Illinois, and New York, and the United States Supreme Court, testing the legality of laws restricting the working hours of women. Recent European students have extended the scope of occupational diseases to include numerous nervous disorders such as paralysis, atrophy, neuritis, neuralgia, spasms, neurasthenia, hysteria, and sciatica, when due to overspeeding, excessive hours, or monotony. To be sure, occupation is only one of numerous causes of such disorders, which include low pay, inadequate training and consequent low standards of living. Overspeeding, noise, long hours, monotony, and the fatigue resulting from all of these create a predisposition to disease by reducing the power of resistance of the body. Hence there results greater susceptibility to ordinary colds, grippe, pneumonia, tuberculosis, and other infectious diseases. Seasonal trades also, such as the clothing industry, millinery, fruit and vegetable canning, have their rush periods in which hours of labor are most extreme. There results, especially for women employees who are often most numerous in such seasonal occupations, a lowering of vitality and mental alertness.

JUDICIAL DECISIONS. The workmens' compensation law of Massachusetts gave the Industrial Accident Board considerable discretion in determining the cases for which compensation should be given. In the course of the activities this Board decided that a worker afflicted with incapacity as the result of poisoning contracted in lead grinding, and another worker suffering from total blindness due to the breathing of poisonous gases, were entitled to compensation. These decisions were later upheld by the Supreme Court of the State.

In Ohio the Industrial Commission held that lead poisoning did not constitute "personal injury" within the meaning of the compensation law, since it was not due to an industrial accident. This view was reversed by the courts, however, on the ground that in law the term "personal injury" is used to indicate injury to the human body as opposed to injury to property.

OCEANOGRAPHY. See EXPLORATION, section *Oceanography*.

OFFICE BUILDINGS. See ARCHITECTURE.

OHIO. POPULATION. The estimated population on July 1, 1914, was 5,026,898. The population in 1910 was 4,767,121.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	...1914	3,650,000	142,175,000	$87,056,000
	1913	3,900,000	146,250,000	92,138,000
Wheat	..1914	1,975,000	36,538,000	33,365,000
	1913	1,950,000	35,100,000	31,590,000
Oats	1914	1,650,000	50,325,000	22,646,000
	1913	1,800,000	54,360,000	21,744,000
Rye	1914	95,000	1,615,000	1,308,000
	1913	97,000	1,600,000	1,104,000
Barley	..1914	35,000	875,000	516,000
	1913	40,000	960,000	557,000
Potatoes.	1914	150,000	14,250,000	7,552,000
	1913	160,000	10,240,000	8,704,000
Hay	1914	2,812,000	*a* 3,178,000	42,585,000
	1913	2,960,000	3,848,000	49,254,000
Tobacco	.1914	86,800	*b* 78,120,000	6,875,000
	1913	81,900	61,425,000	7,002,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. Ohio ranks fourth among the States in the value of its mineral production, which in 1913 was $121,690,661, compared with $111,229,656 in 1912. Ohio is the first State in the value of clay products and in the manufacture of grindstones and pulpstones; it ranks seventh in quantity and sixth in value in the production of petroleum; and in the manufacture of pig iron is surpassed only by Pennsylvania. The production of coal in 1913 amounted to 36,200,527 short tons, valued at $39,948,058, the output both in quantity and value being the maximum of the State. The coal production of the State in 1914 is estimated by the United States Geological Survey at 20,000,000 tons. On April 1, all the coal miners in the State went on strike over the wage scale, the matter in dispute being whether wages should be paid on a mine-run basis, as provided by recent legislation. This condition accounts in a large measure for the considerable decrease in the production of 1913. The production of petroleum, which stands third among the State's mineral industries, decreased slightly in quantity from 8,969,007 barrels in 1912 to 8,781,468 barrels in 1913, while the value increased about 45 per cent over the previous year, or from $12,085,998 to $17,538,452. The value of the natural gas produced in 1913 was $10,416,699, compared with $11,891,299 in 1912. The principal quarry product is limestone, of which there was a large quantity and a great variety in the State. The total value of the stone produced in 1913 was $6,261,338, of which the limestone quarries contributed $4,945,310, and the sandstone quarries $1,316,028. Three other products of the State have a value exceeding $1,000,000. These are cement, salt, and sand and gravel. The output of coke also exceeds $1,000,000, but the coal obtained for its manufacture comes chiefly from West Virginia. Other commercial mineral products of the State are bromine, calcium, chloride, ferro alloys, gypsum, iron ore, mineral waters, oilstones, pyrite, sand-lime brick, and sulphuric acid.

Transportation. The total mileage of single-track railroad operating in the State in 1913 was 4900. There were in addition 956 miles of second track, 220 miles of third and fourth track, and 3239 miles of yard track and sidings, making the total miles of track 9253.

Education. The total school population of the State on Aug. 31, 1914, was 1,271,443, the total enrollment being 895,167, and the average daily attendance 720,440. The teachers numbered 30,358, of whom 22,173 were women, and 8185 were men. The average yearly salary for teachers was $527. The total expenditure for educational purposes in 1914 was $36,455,334.

Finance. The report of the State Treasurer for the fiscal year ending Nov. 15, 1914, showed a balance in the treasury at the beginning of the year of $5,535,698. During that period the receipts amounted to $20,544,539, and the disbursements to $18,345,251, leaving a balance at the close of the year of $7,734,955. The State has no bonded debt.

Charities and Corrections. The charitable and correctional institutions under the control of the State Board of Charities include the Athens State Hospital, Cleveland State Hospital, Columbus State Hospital, Dayton State Hospital, Longview Hospital, Massillon State Hospital, Toledo State Hospital, Ohio Hospital for Epileptics, the Madison Home, Ohio Soldiers' and Sailors' Home, Ohio Soldiers' and Sailors' Orphans' Home, State School for the Blind, State School for the Deaf, Institution for Feeble-Minded, State Sanatorium, State Penitentiary, State Reformatory, Boys' Industrial School, Girls' Industrial School, and the Lima State Hospital. The Reformatory for Women is now under construction. A new site of 1500 acres was purchased for a penitentiary. All sentences to State Reformatory and to State Penitentiary are now indeterminate. The juvenile court law is enforced in the State and its operation has been very satisfactory.

Politics and Government. The Legislature did not meet in regular session in 1914, as the sessions are biennial and the last was held in 1913, but there were two special sessions. The first of these convened in January and adjourned late in February, being called by Governor Cox largely for the purpose of supplementing the work done in the regular session of the year previous. The session of 1913 had followed the adoption of the new State constitution in the summer of 1912, and there was a great amount of legislation required to carry out the mandates of the new organic law. Most of these mandates were carried out in the winter of 1913, but several important ones were omitted on the general understanding that the Legislature would be called into special session in 1914. Among the important acts of the first special session of 1914 were those reorganizing the agricultural interests of the State and putting them under control of an agricultural commission; reorganizing the common school system of the State along plans approved by a special commission which had made an exhaustive survey; establishing a new method of computing wage scales for soft coal miners; and authorizing the establishing of conservancy districts as a flood-prevention measure. The second special session of the Legislature, which lasted only one day, was called in June for the purpose of reducing the State tax levy.

Elections were held in November for State officers and for United States Senator. Senator Burton's term expired March 4, 1915, and he early announced he would not be a candidate for reëlection. Opposed for the Republican nomination for Senator were former Senator Joseph B. Foraker, Warren G. Harding, former Lieutenant-Governor and a well-known politician, and Ralph D. Cole, former Congressman. All these candidates made aggressive speaking campaigns and the result was in doubt until the primary elections August 11, when Mr. Harding was successful. The Democrats nominated for United States Senator Timothy S. Hogan, Attorney-General of the State, and the Progressive nominee was Arthur L. Garford, a wealthy manufacturer of Elyria. For Governor the Republicans nominated Frank B. Willis, Congressman; the Democrats renominated James M. Cox; and the Progressives nominated James R. Garfield, son of the former President, and a member of the Roosevelt cabinet. In the elections on November 3 the Republicans elected Willis by a vote of 524,625, compared with 493,367 for Cox and 60,971 for Garfield. Mr. Harding was elected to the Senate by a vote of 526,115, compared with 423,742 for Hogan and 67,509 for Garford. The total vote cast for Governor was 1,130,651, compared with 1,033,557 cast for President in 1912. This represents a Republican gain of 247,559, a Democratic gain of 70,215, and a Progressive loss of 168,356. The Republicans also elected the entire State ticket, excepting chief justice of the Supreme Court, as follows: Lieutenant-Governor, John H. Arnold; Treasurer of State, Rudolph W. Archer; Secretary of State, Charles Q. Hildebrandt; Attorney-General, Edward C. Turner. The Democratic candidate for chief justice, Hugh L. Nichols, was elected. The newly elected Legislature is Republican in both branches.

At this election the people also voted on four amendments to the State constitution. The amendments providing for woman suffrage and for prohibition were overwhelmingly defeated. The two largest cities of the State, Cleveland and Cincinnati, voted against prohibition by about 50,000, Columbus, the third city, voting for prohibition by a small majority. An amendment put forward by the wet interests, as a counter move to the prohibition proposal, was adopted by a majority of about 9000. This amendment wipes out county local option and establishes the township and municipality as the unit for local option. It had the immediate effect of turning 45 dry counties back into the wet column. The fourth amendment related to taxation and was defeated. The Republicans elected representatives to Congress from the first, fourth, fifth, sixth, seventh, tenth, eleventh, fourteenth, fifteenth, sixteenth, eighteenth, nineteenth, and twenty-second districts, the Democrats being successful in the others. Among the interesting results of the congressional elections was the election of Nicholas Longworth for the first district. Mr. Longworth is the son-in-law of Theodore Roosevelt and a former member of the House.

All the coal mines in the State shut down on April 1 as the result of failure of negotiations of agreement as to a new basis of payment enforced by a legislative act passed in January. The strike continued all the rest of the year, involving great suffering among the miners and great losses to the industry. (See STRIKES.) By a decision of the United States Supreme Court in November Cleveland gains possession of a tract of lake-front land, worth several million, which railroads have occupied for half a century. At the November election Cuyahoga County (Cleveland) voted to build a third high-level bridge across the river valley at a cost of $5,000,000.

STATE GOVERNMENT, 1914. Governor, James M. Cox; Lieutenant-Governor, W. A. Greenlund; Secretary of State, Charles H. Graves; Treasurer, J. P. Brennan; Auditor, A. V. Donahey; Attorney-General, Timothy S. Hogan; Adjutant-General, G. N. Wood; Commissioner of Insurance, Edmond H. Moore; Superintendent of Education, Frank W. Miller—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, Hugh L. Nichols, Democrat; Associate Justices, James G. Johnson, Democrat; John A. Shauck, Republican; Maurice H. Donohue, Democrat; J. F. Wilkin, Democrat; O. Newman, Democrat; R. M. Wanamaker, Progressive; Clerk, Frank McKean, Democrat.

STATE LEGISLATURE, 1913.

	Senate	*House*	*Joint Ballot*
Republicans	7	33	40
Democrats	26	87	113
Progressives	..	3	3
Democratic majority.	19	51	70

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

OHIO FLOOD PREVENTION. See FLOOD PREVENTION.

OHIO STATE UNIVERSITY. An institution of higher learning, founded at Columbus, in 1870. The total enrollment in all departments of the university in the autumn of 1914 was 4466, and there were 423 members in the faculty. On July 1, Starling-Ohio Medical College (including a college of dentistry) became a part of Ohio State University. The university also established a College of Homeopathic Medicine. There were no noteworthy benefactions received during the year. The productive funds amount to $1,300,553. The library contains 138,101 volumes. The president is W. O. Thompson, D.D., LL.D.

OHIO UNIVERSITY. An institution for higher education, founded at Athens, Ohio, in 1804. The attendance in all departments in the autumn of 1914, was 2276, and the faculty numbered 85. During the year four high-grade instructors, giving all time to conducting extension classes, were added to the faculty. The productive funds of the university amount to about $150,000, chiefly land endowment. The total receipts in 1913–14 amount to $289,566. The library contains 47,000 volumes. The president is Alston Ellis, Ph.D., LL.D.

OHIO WESLEYAN UNIVERSITY. An institution for higher education, founded under the auspices of the Methodist Episcopal Church at Delaware, in 1842. The total number of students enrolled in the several departments of the university, in the autumn of 1914, was 1126, divided as follows: College, 963; Academy, 25; Music, 125; Art, 13. The faculty numbered 66. During 1914 there were added to the faculty professors of education and home economics. No noteworthy benefactions were received during the year. The amount of productive funds is $1,070,000, and the present income from all sources is $125,000. The library contains 66,210 volumes. The president is Herbert Welch, D.D.

OIL, CRUDE. See PETROLEUM.

OIL ENGINES. See INTERNAL COMBUSTION ENGINES.

OKLAHOMA. POPULATION. The estimated population on July 1, 1914, was 2,026,534. The population in 1910 was 1,657,155.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	4,000,000	50,000,000	$32,000,000
	1913	4,750,000	52,250,000	37,620,000
Wheat	1914	2,525,000	47,975,000	44,137,000
	1913	1,750,000	17,500,000	14,350,000
Oats	1914	1,100,000	30,250,000	12,402,000
	1913	1,080,000	18,540,000	8,343,000
Barley	1914	7,000	175,000	98,000
	1913	7,000	63,000	50,000
Potatoes	1914	32,000	2,240,000	2,016,000
	1913	32,000	1,920,000	2,016,000
Hay	1914	450,000	*a* 508,000	4,013,000
	1913	450,000	382,000	3,973,000
Cotton	1914	2,825,000	*b* 1,250,000	38,862,000
	1913	3,009,000	840,000	45,827,000

a Tons. *b* Bales.

MINERAL PRODUCTION. The coal mined in Oklahoma in 1913 amounted to 4,165,770 short tons, valued at $8,542,748, this being, both in quantity and value, the maximum record for the State. Oklahoma, more than any other of the coal-producing States in the Mississippi Valley and the Rocky Mountain region, was benefited by the labor troubles in Colorado as is shown by the increase in production over 1912, amounting to 490,352 tons, or 13.34 per cent. The value of the product increased

$675,417, or 8.6 per cent, and there was, in 1913, an average of 9044 men employed, compared with 8785 in 1912. The State produced important quantities of lead and zinc, the value of the silver, lead, and zinc produced in 1913 being $1,855,217, compared with $1,101,042 in 1912. The increased yield of lead and zinc in 1913 was due entirely to operations in the Miami field. The total value of the mineral products of the State in 1913 was $80,168,820, compared with $53,614,130 in 1912. Of the 1913 total the production of petroleum amounted to $59,581,948. Oklahoma now ranks second in quantity among the petroleum-producing States, California being first, but in 1913 the value of the Oklahoma production exceeded that of California by nearly $14,000,000.

CHARITIES AND CORRECTIONS. The correctional and charitable institutions of the State include the Oklahoma State Home at Pryor, the Oklahoma School for the Blind at Fort Gibson, the Industrial Institute for the Deaf, Blind, and Orphans (colored), the Confederate Soldiers' Home at Ardmore, State School for the Deaf at Sulphur, the Oklahoma State Training School at Paul's Valley, the Sanatorium Company Hospital at Norman, the State Penitentiary at McAlester, and the State Reformatory at Granite.

TRANSPORTATION. The total railway mileage in operation in the State in 1914 was 6356 miles. During the year there were constructed in Carter and Jefferson Counties 30 miles of road, known as the Oklahoma, New Mexico, and Pacific Railway. There was also under construction a road from Jennings, extending south through Drumright and the oil country for about 22 miles.

EDUCATION. The total school population of the State in 1914 was 575,021, the total enrollment in the public schools being 496,908, and the average daily attendance 322,117. The male teachers numbered 3214, and the female teachers 7604. The average yearly salary paid to teachers was $447.83.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for Governor and for United States Senator, Senator Gore being a candidate for reëlection. Unusual interest was given to the campaign for the nominations for Governor by the candidacy of two former convicts, George W. Cromp, Jr., and Al. Jennings. The latter, who was at one time a famous train robber, and served a term in the Federal prison, made his campaign on the Reform platform. In the primaries held on August 4, R. W. Williams was nominated by the Democrats, John Fields by the Republicans, and J. P. Hickman by the Progressives. For United States Senator, T. P. Gore was nominated by the Democrats, John H. Burford by the Republicans, and W. O. Cromwell by the Progressives. In the election of November 3 the Democrats succeeded in electing their candidate for Governor, Mr. Williams, by a vote of 100,567, compared with 95,859 for Fields, Republican, and 4186 for Hickman, Progressive. Senator Gore was reëlected with 119,214 votes, compared with 73,153 for Burford, Republican, and 3962 for Cromwell, Progressive. The Socialists' candidates for both governor and senator received each over 50,000 votes. The total vote cast in the election was 253,581, compared with 254,380 in the presidential election of 1912. The Democrats showed a loss of about 20,000 votes, and the Republicans an increase of about 5000. There was no Progressive vote cast in the presidential election of 1912. The Democrats elected their representatives to Congress in all districts except the eighth.

STATE GOVERNMENT, 1915. Governor, Lee Cruce; Lieutenant-Governor, J. J. McAlester; Secretary of State, Ben. F. Harrison; Treasurer, Robert Dunlop; Auditor, J. C. McClelland; Attorney-General, Charles West; Commissioner of Insurance, A. L. Welch; Commissioner of Education, R. H. Wilson; President Board of Agriculture, G. T. Bryan; Adjutant-General, F. M. Canton—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, John B. Turner; Associate Justices, Mathew J. Kane, Robert L. Williams, Jesse J. Dunn, and Samuel W. Hayes; Clerk of the Court, W. H. L. Campbell—all Democrats.

STATE LEGISLATURE, 1913.

	Senate	*House*	*Joint Ballot*
Republicans	8	19	27
Democrats	36	80	116
Democratic majority...	28	61	89

The representatives in Congress will be found in the section *Congress*, under the article UNITED STATES.

OLD AGE PENSIONS. There were no important developments in the old age pension movement during 1914. In Massachusetts, however, a bill was passed requiring the director of the Bureau of Statistics to collect data in connection with the census of 1915 as to the number of persons over 65 years of age, the number of dependents in State and other institutions, and kindred facts, so as to present information to the Legislature on this matter. The subject of old age pensions was introduced into the Canadian House of Commons last spring, but was shelved by the government. Those favorable to the bill contended that while assistance is given railways and other companies, and a considerable amount is paid out for housing the poor, yet no provision is made for the aged. The finance minister, on the other hand, maintained that there was "no great body of pronounced sentiment calling for action."

As yet there has been no legislative action taken in the United States upon the subject. But at present many of the great corporations have retirement pensions, and civil pensions are now quite common. On grounds of efficiency from the productive standpoint, most of the railroads in the country provide for the retirement of their employees at ages ranging from 60 to 70.

Many countries have made public provision for the aged. Such systems exist in Austria, Australia, Belgium, Denmark, Finland, France, Germany, Great Britain, Ireland, New South Wales, New Zealand, Sweden, Victoria, and to a modified extent in Spain. The most elaborate of these and the only universal law is that of Sweden passed in 1913.

OMAN. An independent Mohammedan State in Southeastern Arabia under a sultan subsidized by the government of India, which retains a political agent at his court with the right to restrain the cession of territory to any power other than Great Britain. Area, about 82,000 square miles, carrying a population estimated at 500,000. Muscat, 25,000 inhabitants, is the capital. The total imports, 1912–13, Rs. 6,953,363—rice, Rs. 879,251; coffee, Rs. 301,467; sugar, Rs. 236,983; piece goods, Rs. 1,027,004; silk and silk goods, Rs. 41,760; twist and yarn, Rs. 202,210; cereals, Rs. 109,356; arms and ammunition, Rs. 2,760,865. Total exports, Rs. 4,522,163—dates, Rs. 1,469,485; fruit, Rs. 57,769; fish, Rs. 118,733; limes, Rs. 100,950; pearls, Rs. 18,400; mother-of-pearl, Rs. 39,250; cotton goods, Rs. 261,100; hides and skins, Rs. 48,830. The statistics cover oversea trade, but there is also a large unrecorded caravan trade with the interior. The reigning Sultan, Seyyid Timor bin Feysal, was born in 1886, and succeeded his father to the throne Oct. 5, 1913. British agent and consul in 1914, Maj. S. G. Knox.

ONTARIO. A province of the Dominion of Canada. Area, 260,862 square miles, with a population (1911) of 2,523,274. Area, including that portion of the Northwest Territories annexed to Ontario in 1912, 407,262 square miles, carrying a population of 2,527,292. The capital is Toronto, with (1911) 376,538 inhabitants—after Montreal the largest city in Canada. The province is administered by a lieutenant-governor, appointed by the Governor-General of Canada and acting through a responsible executive council. There is a unicameral legislative assembly of 106 members elected for four years. Sir James P. Whitney, provincial Premier, died Sept. 25, 1914. His successor was W. H. Heart. See also CANADA.

OPAL. See GEMS AND PRECIOUS STONES.

OPERA. See MUSIC.

OPIUM HABIT. See COCAINE AND OPIUM HABIT.

OPIUM TRADE. See CHINA.

OPTOMETRY. An important development in this field during the past year has been the establishment of a chair of optometry in Ohio State University. Similar action is contemplated in several States, the optometry course in the department of physics, Columbia University, having proved highly successful. A notable achievement, accomplished through the coöperation of leading magazines, national organizations for public welfare, and prominent citizens, has been the prevention of the sale at the Panama-Pacific and Panama-California Expositions of "spectacle concessions," or privileges granted for a stipulated sum to sell or fit glasses.

The position of optometry as a special art is becoming more firmly established as a result of amendments improving the laws at present in force in a majority of the States.

The well-nigh universal need for glasses makes it imperative that all reasonable safeguards should surround the practice of fitting them.

ORAL HYGIENE. See DENTISTRY.

ORANGE FREE STATE. One of the four original provinces of the Union of South Africa. Of the total population in 1911 (528,174), 277,518 were males and 250,656 were females. White males numbered 94,488, white females 80,701; colored males 183,030, colored females 169,955. The provincial capital is Bloemfontein, with 14,720 white, 12,205 native and other colored inhabitants in 1911; a total population of 26,925. There are about 800 government and government-aided schools, with a total enrollment of some 25,000 pupils. The province is adapted to grazing and agriculture. Stock farms are numerous, but in the eastern districts grain raising is growing in favor. The number of horses in 1911 was 220,725, cattle 1,286,234, sheep 8,587,638, goats 1,048,571, swine 162,656. The output of wheat for 1911 was 232,591 muids (of 200 pounds); oats, 633,289 muids (of 150 pounds); corn, 1,788,294 muids (200 pounds); barley, 18,939 (160 pounds); potatoes, 199,791 (150 pounds). Dr. A. E. W. Ramsbottom was provincial administrator in 1914. See SOUTH AFRICA, UNION OF, for area, population, and other statistical details.

ORCHESTRAS. See MUSIC.

ORDNANCE. See MILITARY PROGRESS.

ORE DEPOSITS. See GEOLOGY.

OREGON. POPULATION. The estimated population on July 1, 1914, was 783,239. The population in 1910 was 672,765.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	22,000	660,000	$ 541,000
	1913	21,000	598,000	419,000
Wheat	1914	799,000	16,604,000	16,936,000
	1913	750,000	15,717,000	11,788,000
Oats	1914	364,000	12,740,000	5,733,000
	1913	360,000	15,228,000	5,787,000
Rye	1914	21,000	336,000	336,000
	1913	20,000	350,000	262,000
Barley	1914	122,000	3,660,000	2,288,000
	1913	120,000	4,200,000	2,310,000
Potatoes	1914	49,000	4,753,000	2,852,000
	1913	50,000	6,750,000	3,915,000
Hay	1914	858,000	a 1,716,000	15,787,000
	1913	825,000	1,732,000	15,588,000

a Tons.

MINERAL PRODUCTION. The mine output of gold, silver, copper, and lead in Oregon in 1913 was valued at $1,746,402, compared with a value of $849,886 in 1912, an increase of more than 100 per cent. With the exception of copper, all these metals showed an increase in production. The gold yield for 1913 was $1,627,710, of which $1,177,082 was derived from deep mines, and $450,628 from placers of various kinds. The yield of silver aggregated 179,036 fine ounces, valued at $108,139, an increase of 121,955 ounces in quantity and $73,034 in value over that of 1912. The mine production of copper in 1913 was 43,330 pounds, valued at $6176, a decrease of 217,099 pounds in quantity and $36,255 in value from that of 1912. There were produced in 1913, 87,207 pounds of lead, valued at $3837, compared with 39,317 pounds, valued at $1769 in 1912. Other important mineral products of the State are clay products, sand and gravel, stone, coal, gems, gypsum, mineral waters, and platinum. The total value of the mineral products of the State increased from $2,553,549 in 1912, to $3,563,919 in 1913.

The production in the mines of the State in 1914, according to the estimates of the United States Geological Survey, was less than that of 1913. The gold yield was about $1,600,000, the silver 126,000 ounces, copper 5000 pounds, and lead 41,000 pounds.

TRANSPORTATION. The total length of main railway line operated in the State on June 30, 1914, was 2039. There were, in addition, 991 miles of branches and spurs. The roads having the longest mileage were the Oregon-Washington Railroad and Navigation Company, 537; Southern Pacific, 436; Oregon Trunk Line, 156; and the Corvallis and Eastern, 140. There were 426 miles of electric railroads in the State on the same date.

EDUCATION. The total school population of the State in 1914 was 202,389, the total enrollment being 137,640, and the average daily attendance in the public schools 115,205. The male teachers numbered 1101, and the female 4650. The average monthly salary paid to male teachers was $85.59, and to female $62.95. The total expenditures for school purposes during the year amounted to $7,199,471.

FINANCE. The report of the State Treasurer for the biennial period 1912–14, showed a balance on hand on Oct. 1, 1912, of $993,736. The receipts for the two years amounted to $10,226,773, and the disbursements to $10,652,592, leaving a balance on hand on Oct. 1, 1914, of $567,917.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State, under the supervision of the State Board of Control, with their populations on Sept. 30, 1914, are as follows: Oregon State Hospital, at Salem, 1576; Eastern Oregon State Hospital, at Pendleton, 346; Oregon State Penitentiary, 413; State Institution for Feeble-Minded, 289; Oregon State Training School, 81; Oregon State Tuberculosis Hospital, 60; Oregon State School for the Blind, 32; Oregon State School for the Deaf, 82; Oregon State Industrial School for Girls, 18. There is also the Oregon State Soldiers' Home at Roseburg. The total expenditures for these institutions for the biennium ending Sept. 30, 1914, was $1,689,733.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for Governor and for United States Senator. The Republicans nominated for Governor James Withycombe, and the Democrats C. J. Smith. For the United States Senate Senator Chamberlain was renominated by the Democrats, and R. A. Booth by the Republicans. In the elections held on November 3, the Republicans elected their candidate for Governor, Withycombe, with 121,037 votes, compared with 94,591 for Smith, Democrat, 6123 for Gill, Progressive, 14,284 for Smith, Socialist, and 10,493 for U'Ren, Independent. For United States Senator, Senator Chamberlain was reelected with 111,748 votes, compared with 88,297 for Booth, Republican, 26,220 for Hanley, Progressive, and 10,666 for Ramp, Socialist. The total vote cast was 248,043, compared with 137,040 in 1912. The Republican vote showed an increase of about 85,000, the Democrats a decrease of about 45,000, the Progressives a decrease of about 30,000, and the Socialists an increase of about 1000. In this election a Prohibition amendment to the Constitution was adopted by a large majority of 36,000. In the same election the people, by a very small majority, adopted a constitutional amendment abolishing capital punishment.

STATE GOVERNMENT, 1915. Governor, James Withycombe, Republican; Secretary of State, Benjamin W. Olcott, Republican; State Treasurer, Thomas B. Kay, Republican; Superintendent of Public Instruction, J. A. Churchill, Republican; Adjutant-General, W. E. Finzer, Democrat; Attorney-General, George M. Brown, Republican; Commissioner of Insurance, J. W. Ferguson, Democrat.

JUDICIARY. Supreme Court: Chief Justice, Robert Eakin; Justices, Thomas A. McBride, Frank A. Moore, Henry J. Bean, George H. Burnett, Lawrence T. Harris, and Henry L. Benson; Clerk, J. C. Moreland—all Republicans.

STATE LEGISLATURE, 1913.

	Senate	*House*	*Joint Ballot*
Republicans	28	48	76
Democrats	2	5	7
Republican Progressive	0	6	6
Democrat Progressive	0	1	1
Republican majority	26	36	62

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

OREGON, UNIVERSITY OF. A State university for higher education, founded at Eugene in 1876. The students enrolled in all departments of the university in the autumn of 1914 were 1765, and the faculty numbered 125. There were several changes in the faculty during the year, among which were the appointment of H. D. Sheldon, dean of the School of Education; H. B. Miller, director of the School of Commerce; E. F. Lawrence, director of the School of Architecture; and W. F. G. Thacher, professor of English. The most noteworthy benefaction received during the year was a gift to the Medical School, by the Oregon-Washington Railroad and Navigation Company, of land valued at $100,000. The productive funds amount to about $190,000, and the annual income to about $300,000 from the State, plus $10,000 from endowment. The library contains 53,000 volumes. The president is Prince L. Campbell, LL.D.

ORNITHOLOGY. The ornithological societies continued their campaign for bird protection during the year, with, on the whole, satisfactory results. Miller reported that large numbers of Rhea skins are being imported from South America, for use in the manufacture of feather dusters. The law classifies this as an ostrich, and hence its feathers may be admitted to this country.

The influence of birds on insect life was the subject of investigation in a number of western United States. Kalmbach gave a list of 45 native birds who are feeding on the alfalfa beetle, which has gained a footing in Idaho, Utah, and Wyoming. He thought that birds are the only efficient enemies of this beetle, and regards the English sparrow as ranking high in efficiency in this respect. He was, however, doubtful if in view of the other habits of the bird, it should be encouraged. In California, Bryant thought that 120,453 grasshoppers per day is a fair estimate of their destruction by birds. The largest number found in the stomach of any one individual was 84, taken from the burrowing owl. Anthony's green heron, the Western meadow lark, and Bullock's oriole were each credited with over 40 per day. Bryant also reported on the economic importance of the Western meadow lark, and found that farmers were about equally divided in their opinion as to whether it does more harm than good. Bryant thought the balance was in favor of the bird. In the stomachs he found many so-called protectively colored insects, but these may have been taken while flying and thus easily seen.

The last known passenger pigeon died on Sept. 1, 1914, in the Zoölogical Garden of the University of Cincinnati.

Huxley reported on the courtship of the great crested grebe, and decided that there is a "mutual selection," for each seemed to stimulate the other, thus a real process of sexual selection. Courtship proper began after pairing, and had no real connection with coition.

The influence of environment on birds was treated in papers by Beebe and by Wetmore. Beebe kept scarlet tanagers and bobolinks in a darkened room with an abundance of food, and under these conditions the season of autumnal molting passed without any shedding of feathers. In the spring they were gradually brought into normal conditions, when on molting they reassumed summer plumage. There is thus no predetermined series of changes in color. Wetmore found that in the euphonias, who feed only on the outer gelatinous covering of mistletoe seeds, the stomach shows very decided modifications from the condition found in other members of the family, in being merely a thin transparent membrane. This degeneration of the muscular tissue is a result of feeding on this soft material, which does not need a muscular stomach for digesting.

In the Adéle penguins, Levick stated that the female selects the nesting site in early spring and waits there for the male. There are contests for the possession of the females, and the final nesting is for the season. After two eggs are laid, one bird leaves and may remain away for as many as 10 days, after which it returns and its place is taken by the other. The eggs hatch in 32 days, and the young grow very rapidly. Later they are herded into crèches, where they are cared for by some old birds, while the others play. This is an unusual development of the social instinct.

ORR, ALEXANDER ECTOR. An American financier and philanthropist, died June 3, 1914. He was born in Strathbane, Ireland, in 1831. When he was 19 years of age he visited the United States in the course of a journey taken for the benefit of his health, and in the following year returned to make a permanent home. He studied for a short time in Philadelphia and then removed to New York where he obtained a position in a shipping and commission house. In 1858 he was employed by David Dows & Co., which through his efforts became one of the largest grain and commission houses in the United States, and in 1861 he became a member of the firm. He took a great interest in municipal affairs and particularly in matters connected with transportation in New York City. On the creation of the Rapid Transit Commission in 1897 he was made its chairman and guided the progress of the work of this commission until it was superseded by the Public Service Commission. He took a leading part for many years in the work of the Chamber of Commerce in New York City and served as its president; he also became president of the New York Life Insurance Company in 1905, but resigned in 1907. In politics he was active and independent. He was associated with John Bigelow and others in the Canal Commission (appointed by Governor Tilden in 1875), which exposed the canal ring frauds and led to the placing of State canals under the State superintendent of public works. He was for a time civil service commissioner in Brooklyn and during his entire career was identified with many civic financial and charitable organizations.

OSBORN, THOMAS M. See PENOLOGY.

OXYGEN, SOLID. See PHYSICS.

OYSTER INDUSTRY. See FISH AND FISHERIES.

PAHANG. A State (the easternmost) of the Federated Malay States protectorate (q.v.). It is the largest State of the federation, and borders on the east upon the China Sea. It is watered by the Pahang (and its tributaries), the Kuantan, the Rompin, and the Endau Rivers. Agriculture is practiced, and rice, coconuts, and tapioca are under cultivation. Gold is worked. But the chief industry of the State is tin mining, principally in the Raub and Kuantan districts. Kuala Lipsis is the administrative headquarters, but the Sultan and the regent (Tungku Besar) reside at Pekan, the old capital. Roads are under construction between the principal points. A railway line from Gemas in the Negri Sembilan to Kuala Semantan in Central Pahang (70 miles), completed in June, 1911, is being extended to the Kelantan border. The native ruler is Sir Ahmad Maätham Shah bin Almerhum Ali. The British resident was E. J. Brewster in 1914.

PAINTING AND SCULPTURE. The immense popular and artistic success of the large International Exhibition held in 1913, under the auspices of the American Association of Painters and Sculptors, may account for a certain inactivity, from an exhibition point of view, of the more advanced group of American artists during 1914. This so-called advanced group is made up largely of the men affected by the influences which have set in since the reign of Manet, Monet, and their followers, that is to say, the influences which have sprung from Cézanne, Van Gogh, and Gauguin. Apparently the fear of not repeating the sensation caused by what has come to be known as the Armory exhibition, has restrained the leaders of the anti-academic group from holding another exhibition.

In the year 1914 they broke up into many smaller groups and relied on smaller exhibitions to present their work to the public. At least two new dealers' galleries have been created by the interest in new work, while one long recognized conservative gallery has from time to time made a point of holding radical exhibitions. Meanwhile here and there a rebel has crept in among the more decided conservatives, and found room in their larger and smaller groups. The final result has been that although "modernism" is discussed more and more, and taken more to heart by a larger number of artists, the American public has had no such sweeping evidence of its effect as was presented last year.

In general, Cubism and the more abstract movements have taken little or no hold of the artists—with one important exception. But what is generally termed Post-Impressionism is beginning to bear fruit that is worth while. As it is abroad, so it is with us; the new movement has become in a sense the fashion, so that in addition to those men who have found in its really significant manifestations a genuine inspiration, there are, as is always the case with art movements, a crowd of imitators who are either starting out in accordance with the fashion, or have turned turtle and changed to the fashion. And yet, in spite of the effect of the new movement the well established official men still hold the balance of power, and dominate the large exhibitions, through their positions as jurymen and as officers of one kind and another.

A movement is on foot to break down the official control, and to establish more liberal exhibitions through an extension of the self-organized group system, which has been successful on a small scale at the MacDowell Club in New York, at the Plastic Club in Philadelphia, and in one or two other places. While these exhibitions have so far been distinctly minor, their liberality has attracted such influential men as Robert Henri and others, who hope to give the system such a wide-spread test that the artist will be able to present his work to the public, and permit it to be judged by the public without the artificial obstacles set in his path by unsympathetic juries, and the usual internal politics of powerful art organizations.

Taking up the large exhibitions in the order of their time, the first to be considered is the Architectural League's exhibition which opened at the Fine Arts Building in New York in February. In addition to the usual extensive and somewhat confused display of architectural drawings and photographs, there were sketches for decoration and sculpture, and among those who gave a fresh note to the exhibition may be mentioned Robert V. Chanler, Howard Cushing, Henry Reuterdeuhl, Arthur Crisp, and Bertram Hartmann among the decorators, and Albin Polasek, Karl Bitter, and Sherry Fry among the sculptors, while, either through the medium of photographs or models, a number of works of sculpture for the Panama-Pacific exposition by Robert Aitken, Charles Cary Rumsey, and others were to be seen. The exhibition was more than usually satisfactory in its general arrangement, but under present conditions it is at best a make-shift, as comparatively few decorations or works of sculpture can be shown in their final form, owing to lack of space.

The one hundred and ninth annual exhibition of the Pennsylvania Academy of Fine Arts equaled the standard already set by these occasions. In fact the tendency of the large annuals to repeat each other is due to the habit of maintaining a list of artists whose pictures are invited year after year. This question of the "invited" picture has come to be a matter of discussion and debate, and much correspondence on it has appeared in the papers during the year. It is kept a secret how many, and which, pictures are invited by the management, and artists sending their pictures before the jury have no idea how much space is left for the uninvited, while the public is left equally in the dark. Perhaps some day the Pennsylvania Academy will set the fashion to the other managers of largely invitation exhibitions, which pose as purely jury exhibitions, by labeling each picture that is invited. The spirit of discovery was entirely lacking in the exhibition, and even in cases where pictures very much off the beaten track appeared, they were canvases that had already been accepted by other important exhibitions, and by men whose names are known. In fact, most of the well-known men were represented. There were unmistakably characteristic works by such officially recognized painters as Lydia Emmet, Frank Benson, Cecilia Beaux, Joseph DeCamp, Robert Henri, George Bellows, Gardner Symons, and many others equally prominent in the public eye. Pictures of exceptional merit which gave distinction to the display were sent by Alden Weir, whose delicately decorative portrait of a lady, called "The Orchid," and pastoral landscape, "Pan and the Wolf," are composed with fine, subtle, well-considered relation of tones. Both have the invaluable quality of an appeal that grows deeper on further acquaintance. Of great beauty, too, were several canvases by Childe Hassam, notably "The Yachts and the Swimmer: Appledore," while Ernest Lawson's "Weeds and Willows" was in every sense worthy of his extraordinarily personal art. William Glacken's city scene, "The Green Car," a picture saturated with rich, glowing light, was one of the exceptional contributions, as was also the beautiful "Emerald Pool" by Putnam Brinley. Other pictures of unusual artistic appeal were those sent by Arthur B. Davies and George Luks, while an entire gallery was devoted to Jonas Lie's paintings of Panama, showing various striking aspects of the canal while it was in process of making. The sculpture was limited for the most part to small pieces, and many of the highly successful small bronzes by Paul Manship, which have won favorable comment on many other occasions, were shown. Among the sculptors by whom one or more pieces were shown which added interest to the exhibition were Adolpho de Nesti, Janet Scudder, Giuseppe Donato, Chester Beach, and others. Much of the sculpture had been shown before.

The 1914 Spring Exhibition of the National Academy opened on March 21, and showed in several examples, which the jury had accepted, something like a willingness to meet a few of the "outsiders" half way. This was especially apparent on looking at two pictures by E. Varian Cockcroft, which, to say the least, were sufficiently "modern" to indicate a more liberal spirit on the part of an academic jury. They were vigorous, decorative works, courageous in the breadth of their attack, but not sufficiently sustained in concentration; in other words, good ideas, but only partially realized. A full-length portrait of a man by George Bellows dominated the exhibition, on account of its large dignity of pattern, and splendid set-up, and the vitality with which the bulk and poise of the figure had been grasped.

A portrait by Alden Weir was another important contribution, and Eugene Speicher, in very different vein, showed skill in his painting of John Nelson Cole. A portrait which had caught the charm of the subject, and was engaging and likeable, was the somewhat informal picture called "A Woman Pensive," by Adolphe Borie. Gifford Beal was represented by a clever, effective portrayal of a crowded city street, and Elmer Schofield sent one of his vigorous, straightforward landscapes, which are so telling in exhibition galleries as to appear almost intentionally so. Ben Foster sent his "In the Connecticut Hills," which was bought by the Metropolitan Museum at the close of the exhibition.

A jewel-like canvas of great beauty was Ernest Lawson's "Tulip Tree," which had been previously seen in the altogether delightful one-man show of this gifted painter's work, which was held earlier in the year. There were an unusual number of snow pictures, most of which were by artists who have specialized in such subjects, and who, like Gardner Symons and E. W. Redfield, seem to go on painting snow pictures because they have such workable recipes. Certainly their present work is anything but impulsive or fresh in its sense of enjoyment of the subject. And several pictures which added to the scope of the exhibition were early works by Thomas Eakens, which showed how consistently this conscientious and extremely sincere painter has struggled to master the solid truths of realism. There were comparatively few pieces of sculpture, and again Paul Manship was one of the contributors whose adept modeling and thoroughly studied archaistic formula was well exemplified by a capable study of a baby, which fully realized the form and character of the head, and was decorative in quality, if perhaps over deliberate. Mahonri Young and Abestenia Eberle contributed small figures, character studies of every-day types.

The next most important of the large exhibitions which opened before summer closed the art season temporarily, was the International Exhibition at the Carnegie Institute in Pittsburgh. Whether the Armory show is responsible or not, the fact remains that here again a wave of protest has set in against the timidity with which the management has sought, above all things, to choose work by artists with names, and particularly work which should not shock a conservative public. A group of enthusiastic followers of art is growing up in Pittsburgh, who are making their voices felt against the timid outlook of the annual exhibition. The Carnegie Institute exhibition appears to be entirely dominated by the official powers both here and abroad, and the exhibition has come to be almost entirely chosen from the regular exhibitors at the Paris, London, and American official exhibitions. Although an opportunity is given to Pittsburgh to see the work of a great many well-known men of great artistic interest, both here and abroad, the doors are shut tight against anything in the least revolutionary. Among the Americans the same names already noted recur again. E. W. Redfield, George Bellows, Elmer Schofield, Gardner Symons, Gifford Beal were but a few of the constantly recurring exhibitors whose work proceeds from exhibition to exhibition all over the country, like a never ceasing procession. In the foreign work, the department that makes this exhibition somewhat different from the others of its type, there was almost nothing to give a real idea of the main current of æsthetic thought, which is stronger in Europe than here. There was plenty of capable work by Germans, such as Max Clarenbach, and the immensely clever Leo Putz, and such prominent Frenchmen as Caro-Delvaille, Emile Blanche, Le Sidaner, Henri Martin, La Touche, and Aman-Jean were duly represented. One solitary little picture gave some idea of what the younger men are thinking about in Europe, a well-organized landscape by the Canadian, James Wilson Morrice, who lives in Paris.

A whole group of capable, official Englishmen, expert exhibitors who appear again and again, and who are not likely to frighten the public or make any one laugh, were among the foreign exhibitors. There was a finely designed landscape, small in dimensions, but simple and large in feeling, by Alfred Withers, and one or two other examples to relieve the level of cool, knowing craftsmanship that characterized the foreign work in general. On the whole, it was just such an exhibition as a cautious, timid management would evolve, to please the public, and had little enough of the type of work which, through its very innovations, leads people to be shaken out of their accepted ideas, and to refresh their point of view through interested argument and discussion, and through coming into contact with artistic work which they have not yet learned to label.

An exhibition, which is purely national in character, is the large one which is held every two years in the Corcoran Art Gallery in Washington. The gallery removes its permanent collection to make room for its biennial exhibition, which opened this year on December 17. Admitting the conservative viewpoint of the exhibition, it is on the whole very representative. This year the exhibition was easily dominated by the fine things, some of them already noted in referring to other earlier exhibitions, which were submitted by George Bellows, Arthur B. Davies, and William Glackens. Bellow's portrait called "Geraldine Lee No. I" is as fine as anything he ever painted, and the large figure composition by William Glackens, though not fully satisfying as to drawing, was a magnificent piece of color. Another artist who has come steadily to the front in America in the last three years, is Hayley Lever, who has a remarkable sense of line composition and movement in his landscapes, one of which added greatly to this occasion. The distinguished art of Mary Cassatt was also seen to great advantage, and the brilliant virtuosity of John Sargent.

Maurice Prendergast is a name not associated with official art, and one of his delightful, beautifully balanced color patterns added zest to the exhibition. Among the younger painters, Josephine Paddock, E. Varian Cockcroft, and Mountford Coolidge were the authors of freshly painted and individual canvases, and the recognized men in various parts of the country were presented favorably.

The winter exhibition of the National Academy was particularly noteworthy for the number of comparatively unknown men whose work was seen, to the great advantage of the exhibition. Among artists whose work is not familiar at the general exhibitions was Harry Berlin, whose decorative figure arrangement was much the best figure composition, and should have taken the prize for this type of picture. There were also good works by the comparatively unknown painters, Ferol Sibley, Joel Levitt, who contributed a still life that was swimming in light and one of the most refreshing pictures shown, Waldo Pierce, and Stephen Haweis. Meanwhile the prize for the best picture in the exhibition was for once properly awarded to a Cornish landscape by Hayley Lever. Leopold Seyffert showed some clever Spanish subjects, and Alden Weir continued his long established habit of showing one of the most distinguished paintings.

It is not necessary to go into detail concerning the yearly exhibition at Chicago, or the summer exhibition held at the Albright Gallery in Buffalo, as nearly all the work was seen in other large gatherings of pictures. But two smaller exhibitions are deserving of note. One of them was a comparatively small group of work by the more modern or radical men which first appeared in Pittsburgh, under the auspices of the Pittsburgh Art Society. The group consisted of Arthur B. Davies, the one important artist who has been affected by the Cubists, Walt Kuhn who has become affected by Matisse, William Glackens, Allen Tucker, a painter of great gifts who is rapidly becoming recognized at his true worth, Elmer MacRae, Maurice Prendergast, Charles R. Scheeler, and several others, among whom were several merely imitative sensationalists. The exhibition, however, aside from the beautiful things that it contained, was a complete declaration of a principle, as necessary to the development of art as to the development of civilization in general, namely, the principle of freedom of speech.

After upsetting Pittsburgh, and creating a small whirlpool of discussion, it came to New York and was shown at a prominent dealer's, and again argument, anger, and discussion set in. Meanwhile at the National Arts Club another similar exhibition was installed, and between the two some idea could be obtained of how much of a creative result the vaguely termed "New Movement" was beginning to achieve. It was as might have been expected. A few men stood on their own feet, invigorated by the new freedom, but not keeled over by it. There were some clever imitators, and the groups tailed off to the men who changed to the new fashion simply because they had already proved themselves incapable when using more traditional forms of expression.

The spring and summer, which interrupt the exhibition season in America, are active periods in Europe. Before war was declared the usual large organized exhibitions took place in London, Paris, and Berlin. Probably the most noteworthy artistic event in Europe, however, was none of these, but rather the installation of the Count Comando collection in the Louvre. For with the entrance of this bequest within the galleries, the gods of modern art entered the doors of the Louvre, to the joy of some and the scandalized protest of others. The Louvre now contains fine specimens of Cézanne, including a wonderful still life, of Van Gogh and of Degas. With this same collection, which occupies space set apart for it, are some rare Manets, including "The Fifer," the portrait of Lola Montez, a beautiful moonlight of Dieppe Harbor, and fine specimens of the work of Toulouse-Lautree and Sisley, while a notable work of the Renaissance in the same collection is "The Crucifixion," by Donatello, a work of extreme beauty.

An exceptional occurrence in Paris, which was interrupted by the war, was an exhibition of the work of two American painters, Bryson Burroughs and Ernest Lawson, both of whom met with success, while Lawson was hailed by some of the most appreciative French connoisseurs as a painter of strikingly personal and native quality.

With war, all art activities stopped abroad, except the furious activities of the dealers in transporting their pictures to safe hiding either within the boundaries of the countries at war or outside if possible. Galleries, private and public, were active in safeguarding their treasures. In America the winter season opened with war relief exhibitions, which have continued to increase in number. These in most cases were quite as interesting from a charitable as from an artistic viewpoint.

As to the museums, all other acquisitions in this country were overshadowed by the installation of the Benjamin Altman collection, which brought to the Metropolitan Museum thirteen Rembrandts, not all of them agreed upon by the experts as to their validity, while others are works of the first order. There are, too, splendid primitives by Memling, Holbein, Fra Angelico, Botticelli, Dirk Bouts, Hans Maler, and paintings by Titian, Giorgione, Velasquez, Hals, Ruysdael, Vermeer, and Van Dyck, as well as a collection of rare porcelains, some fine examples of French and Italian sculpture, a few beautiful Persian rugs, and a number of pieces of furniture, together with one or two cases of exceptional enamels, and other objects of art. The museums are rapidly increasing in number, in the size of their collections, and in the scope of their activities throughout the country. Perhaps no other art museum is so closely allied to the surrounding population in the living interest it inspires as the Chicago Art Institute.

The year has been notable for the number of interesting smaller exhibitions, which have included one-man exhibitions by many prominent foreigners and native painters and sculptors. In the latter group should be mentioned Sara Morris Greene, who proved by her exhibition to possess a vigorous sense of large generous modeling. It is to be noted, too, that the year's exhibitions were wider in scope than ever before, including an extraordinarily varied field of artistic endeavor illustrating the present and the past. There were, for example, splendid exhibitions of Mohammedan miniatures, and of Chinese paintings (one of which was of the new acquisitions in this department at the Metropolitan Museum); and a very exceptional exhibition of old Chinese potteries, loaned by Charles Freer, Samuel Peters, and other collectors, was one of the events which particularly interested both painters and sculptors, because the exceptional examples were so splendid in form and color.

Meanwhile during the year, preparations have gone on for the most noteworthy exhibition for the year 1915, namely, the Panama-Pacific, which is to be held in San Francisco, and which will probably prove very representative of American art, particularly as the space expected to be filled by foreign art will have large vacancies on account of the war. A great deal of American sculpture will be seen, and the work of decorators will be shown to advantage. All of these works have been under way during the present year, and some of them have been shown.

PANAMA. A republic between Costa Rica and Colombia. Formerly a department of Colombia, it declared its independence Nov. 3, 1903. The capital is Panama.

AREA AND POPULATION. The area of the republic has been estimated at 87,480 square kilometers (33,776 square miles). This figure will be somewhat reduced if the award of Chief Justice White of the United States Supreme Court, arbitrator of the boundary dispute with Costa Rica, becomes established in fact. The Costa Rican boundary has been a subject of controversy for over 80 years. The arbitration of the dispute was brought about through the good offices of the United States, both Costa Rica and Panama agreeing to this mode of settlement in the Porras-Anderson treaty of 1910. Chief Justice White accepted the office of arbitrator, and in the autumn of 1914 rendered his decision, which was unfavorable to Panama. The decision was not acceptable to either the people or the government of Panama, and the latter, it was reported in January, 1915, notified the American Department of State that it regarded the award as null, void, and not binding upon Panama. It was contended by the Panamanians that the Chief Justice went beyond the scope of the agreement for arbitration, giving to Costa Rica more territory than it asked for.

The 1911 census returned a population of 426,928, including the inhabitants of the Canal Zone. The Canal Zone census of January, 1912, disclosed a population of 62,810. According to the 1911 census, whites numbered 51,323, mestizos 191,933, negroes 48,967, Mongolians (chiefly Chinese) 2313, and Indians 14,128; uncivilized Indians were estimated at 36,138. The city of Panama had in 1911 37,505 inhabitants; Colón, 17,748; David, 15,079; Bocas del Toro, 9759. In 1911, the reported number of marriages was 774, births 6155, deaths 4957, immigrants 54,906, emigrants 42,656.

The Canal Zone, over which the United States has sovereign rights, in virtue of the treaty of Nov. 18, 1903, is a strip of territory extending to width of five miles on either side of the middle of the Panama Canal, but excluding the cities of Panama and Colón. The independence of Panama was recognized by Colombia in a treaty with the United States, signed at Bogotá April 6, 1914; this treaty in 1914 was ratified by Colombia, but not by the United States.

The reported number of government public schools in 1912 was 364. In 1911, the National Institute (high school, college of commerce and language, and normal school) was opened in the city of Panama.

Production, Commerce, etc. Only a small part of the country is under tillage. The leading crop is bananas, and other products include sugar cane, cacao, corn, rice, yams, coffee, tobacco, and sweet potatoes. There is at present little exploitation of the country's mineral resources; the manufactures are unimportant.

Imports (exclusive of nondutiable supplies for the Panama Canal) and exports have been valued as follows:

	1909	*1910*	*1911*	*1912*
Imps.	.$8,756,308	$10,056,994	$9,896,988	$9,871,617
Exps.	. 1,502,475	1,769,880	2,863,425	2,064,648

The largest classified imports in 1912 were: vegetable products, $2,923,934; textiles, $1,666,355; animal products, $1,661,268; mineral products, $1,000,249; liquors and mineral waters, $473,447; chemicals and drugs, $419,800. Classified exports in 1911 and 1912 respectively: vegetable products, $2,550,450 and $1,829,336; animal products, $228,483 and $229,245; mineral products, $83,255 and $6066; miscellaneous, $1238 in 1911. The export of bananas in 1912 was valued at $1,154,442; ivory nuts, $254,264; coconuts, $136,713; rubber, $107,164.

The Panama Railway, which belongs to the United States government, extends across the isthmus from the city of Panama to Colón, 48 miles. In the region around Bocas del Toro, light railways, chiefly for the banana industry, aggregate about 150 miles. A national railway, 271 miles in length, has been projected to connect the cities of Panama and David. In 1914, the government contracted for 51 miles of railway in the western province of Chiriquí, and construction was begun. One section of this line, 23 miles, will extend from the Pacific coast town of Pedregal to La Concepción, via David, and the other section, 28 miles, will be an extension from David to Boquete. Telegraph and post offices number about 40 and 100 respectively.

Finance. The monetary unit is the balboa, equivalent to the American dollar. In 1910, revenue amounted to $3,370,511; in 1911, $3,366,470. In the latter year, the expenditure was $3,359,588. For 1913, revenue was reported at $3,842,214. For the two-year fiscal period 1913 and 1914, the budget balanced at $7,682,428; of the total estimated revenue, customs accounted for $3,300,000.

Government. The executive authority is vested in a President elected for four years by direct vote and ineligible for the succeeding term. The legislative power devolves upon the unicameral National Assembly (32 members elected by direct vote). There are three *designados*, elected by the Assembly to succeed, in order, to the presidency in case of vacancy. The President in 1914 for the term ending Oct. 1, 1916, was Belisario Porras. First *designado*, Rodolfo Chiari; second, Ramón Valdés; third, Aristides Arjona. Each of the seven provinces of the republic is administered by a Governor appointed by the President.

History. A bill empowering the Executive to deport naturalized foreigners who attacked public authorities or institutions through the medium of the press, was strenuously opposed by certain sections of the press, but was favorably considered by the National Assembly. On December 8 Panama ratified the boundary convention with the United States, which was negotiated in September by Ernesto Lefevre, the Panama secretary of foreign affairs, and William J. Price, the American minister. The new agreement gave the United States control of the waters of Colón and Ancon, two small islands in Ancon Harbor, and the site of Battery Hancock on the water front at Colón. See the United States; also International Arbitration and Peace, *Bryan-Wilson Treaties*.

PANAMA CANAL. The middle of 1914 saw the work on the canal advanced to such a stage as to justify regular traffic, which was commenced on August 15.

In this article the technical details of the work throughout the fiscal year will be largely omitted. The chief interest in the canal in 1914 was centred in the opening and traffic.

On January 27 President Wilson signed an executive order establishing a civil government in the canal zone, beginning April 1. As a result of this order, a Governor took the place of the commission of seven members on that date. The President, on June 30, nominated Colonel Goethals to be the first Governor of the Panama Canal, and on April 1 the permanent form of government went into effect. Under this organization there were created a department of operation and maintenance, a purchasing department, a supply department, an accounting department, a health department, an executive office, and a Washington office. The department of operation and maintenance was placed in charge of the Governor, and in the administration of the affairs of the department he is assisted by an engineer of maintenance and a superintendent of canal transportation. To provide for the remaining construction work, as well as the maintenance and operation of the canal, the department was organized with the following divisions:

The division of terminal construction, which embraces charge of the design, inspection and construction of dry docks, shops, coaling and fuel-oil plants, floating cranes, docks, and other terminal facilities, construction transportation by rail, road, street, and sewer work in the new town of Balboa, and the breakwater construction at the Atlantic terminal; the division of erection; the electrical division; the division of municipal engineering; the dredging division; fortification division; and mechanical division. The remaining construction work, consisting of sluicing in the vicinity of Gold Hill, completion of Naos Island Breakwater, excavation in the dry to relieve side pressure in the vicinity of Culebra, and grading and filling at the locks and dams, was combined in a general construction division.

The division of lighthouses was abolished June 16, 1914, and the office engineer with his forces was placed under the engineer of maintenance.

The division of canal transportation, under the supervision of a superintendent of transportation, is charged with the safe conduct of vessels through the canal. The port captains, the board of local inspectors, the pilots, and the admeasurers of vessels, the care and operation of lights and beacons, are directly in charge of the superintendent of transportation. Colonel H. F. Hodges, U. S. A., was appointed engineer of maintenance, Mr. H. H. Rousseau, U. S. N., was appointed engineer of terminal construction, and Capt. Hugh Rodman, U. S. N., superintendent of transportation.

The quartermaster's department and the subsistence department were consolidated to constitute the supply department, which was placed in charge of Capt. R. E. Wood as chief quartermaster. Other departments are the accounting department and the health department. The latter is under the supervision and direction of Lieut.-Col. Charles F. Mason, U. S. A. This department has charge of all matters relating to maritime sanitation and quarantine in the ports and waters of the Canal Zone and in the harbors of the cities of Panama and Colón, and with land sanitation in the Canal Zone and sanitary matters in the terminal cities.

The civil functions of the zone are in charge of an executive secretary, who has supervision of all matters relating to the keeping of the time of employees; to post offices, customs, taxes, and excises, excepting the collection thereof; police and prisons, fire protection, land offices, schools, etc.

By an executive order of May 20, 1914, a committee of six members was created to arrange and provide suitable ceremonies for the formal and official opening of the canal. This committee is composed of persons who were members of the Isthmian Canal Commission.

The most important excavation work carried on throughout the year was in Culebra Cut, where a series of slides occurred in the latter part of 1913.

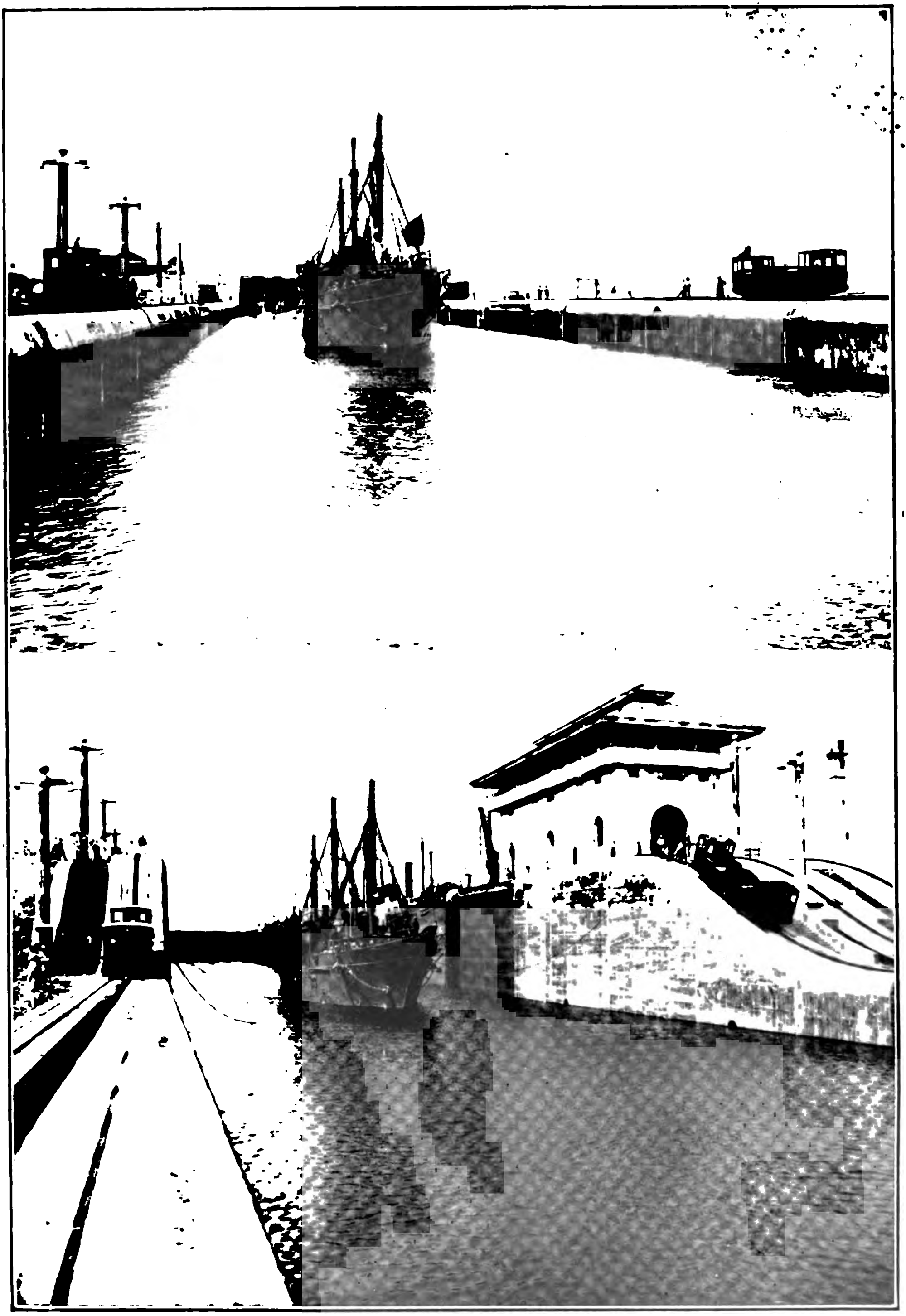
The date originally set for the opening of the canal for commerce was May 10, 1914, but the actual opening, however, was delayed until August 15. The official announcement issued by Secretary Garrison for the opening on that date was as follows: "The Panama Canal will be open for commerce to vessels not needing more than 30 feet of water, on and after Aug. 15, 1914. The official opening of the canal, as heretofore announced, will be in the month of March, 1915. An appropriate announcement will be made when a greater depth of water than 30 feet has been secured. On August 15, Colonel Goethals will inaugurate the commercial service by sending a government boat through the canal. There will be no ceremonies incident to the occasion, but American newspapers which may desire to have representatives present may do so."

On the date mentioned, therefore, the government steamship *Ancon* made a trip through the canal in approximately nine hours, well within the previously estimated time for the passage of a ship through the canal. There were no unlooked for delays. The *Ancon* carried, as guests of the Secretary of War, about 200 people, including President Porras of Panama and his cabinet and other officials of the government of Panama. On the following day, August 16, a large number of commercial vessels passed through the canal. The first vessel of war made a passage on this date. This was the Peruvian torpedo destroyer *Teniente Rodriguez*. The first foreign cargo steamer passing through the canal was the *Daldorch*, of Glasgow, which made a passage on August 22. Prior to the passage of the *Ancon*, a number of barges had passed through the canal. The tolls collected in July prior to the official opening amounted to about $8000.

In spite of conditions caused by the war in Europe and the consequent falling off in sea-carried commerce, traffic through the canal exceeded anticipations even during the first months of its operation. From August 15 to October 1, 81 vessels passed through the canal, and from August 15 to October 1 the total net tonnage, carried from the Atlantic to the Pacific, was 144,343 tons, while from the Pacific to the Atlantic the tonnage was 153,312, making a grand total of 297,665 tons. The total tolls collected in this period amounted to $369,706.

On October 14 occurred a slide in the Culebra Cut which filled a thousand feet of the channel with a great mass of trap rock and loose earth, preventing the passage of ships through the canal for some time. At the time the slide occurred there were two or three ships waiting passage; two days later 14 were at the terminals ready to enter the canal. The slide made it necessary to carry on dredging operations for several months before the full width of 300 feet and depth of 45 feet could be regained. The slide was 2100 feet long, occurring in a part of the bank formerly involved in the east Culebra slide, and it is designated as the new Culebra slide. The channel was cleared sufficiently by October 20 to allow the passage of seven vessels which had been delayed at the south end of the canal. A further movement at the base of this slide on October 31 caused a second suspension of canal traffic which lasted until November 4. The total canal tolls from August 15 to November 1 amounted to $746,793. The first cotton taken through the canal was carried on the steamship *Penrith Castle*, which made the passage on October 22–23 with a cargo of 3270 tons. Grain for Europe, from north Pacific ports of the United States, formed by far the largest single item of cargo carried through in the first months of operation. In the two months and a half of operation ending November 1, the canal was used by 17 eastbound vessels in this traffic, and 8 vessels passed through from the At-

PANAMA CANAL



TOWING BY ELECTRIC LOCOMOTIVES AT GATUN LOCKS
1. U. S. S. "SEVERN" IN THE MIDDLE EAST CHAMBER, READY FOR LOWERING WATER
2. THE SAME VESSEL LEAVING UPPER EAST CHAMBER IN TOW OF ELECTRIC LOCOMOTIVES

lantic to the Pacific in ballast, to return with grain. The next largest single item of cargo handled in the same period was nitrates, principally from Chile. The tolls collected to December 1 amounted to $1,135,205. During this time 120 vessels eastbound and 137 westbound vessels passed through the canal, and of these, 227 were laden, and 30 were in ballast.

The receipts for the m nth of December, 1914, aggregated $411,895. The total collections from the opening of the canal to December 31, 1914, amounted to $1,547,100. During that time, 177 eastbound vessels, and 179 westbound passed through the canal. Of these, 319 were laden and 36 were in ballast. December marked the passage of vessels from the Far East to the Atlantic coast of the United States for the first time.

On November 17, the Panama Railroad Company ceased to act as a co-carrier in connection with steamship lines operating to the Isthmus. In order, however, to take care of the through freight brought to the Isthmus in vessels that do not use the canal, the Panama Railroad Steamship Line, on October 30, established a fortnightly service between New York and Balboa.

The Fifth United States Infantry arrived at Cristobal on November 25, and went into permanent quarters at Empire. This regiment will attend to the policing of the Canal Zone. President Wilson, on November 13, issued a proclamation declaring the neutrality of the Panama Canal Zone, and setting down rules and regulations governing the use of the Panama Canal by vessels of belligerents. At the same time an agreement between the United States government and Panama in regard to the occupation of the waters of the Republic of Panama by belligerent vessels was made public. In the main, the rules of neutrality governing the canal are the same as those in force in all neutral countries.

The actual working force of the canal on Nov. 25, 1914, was 23,113, a decrease of about 500 compared with the previous month. The gold force, composed almost exclusively of white Americans, was 3973. There was a steady decrease in the number of laborers during the year, resulting from the completion of different sections of the canal. The total expenditure for the canal from July 30, 1909, to June 30, 1914, was $332,956,264. Of this sum, $211,295,071 was expended by the department of construction and engineering, $17,270,494 by the department of sanitation, $6,793,089 by fortifications, and $90,374,263 for general items, the remainder being expended by departments of civil administration and the department of law. Work was continued during the year on the gun and mortar batteries provided for the defense of the canal, and by June the concrete work was practically completed. For a discussion of the Panama Tolls Controversy and its results see the article below. See PANAMA.

PANAMA CANAL TOLLS. The Panama Canal Bill passed in 1912, providing for the operation of the canal, contained the provision that American vessels engaged in coastwise trade should be exempted from paying tolls. At the time of its passage this provision met with strong opposition in Congress and outside. It was also opposed in a more or less formal way by Great Britain, as being in contravention of treaties between the American and British governments. The measure, however, was defended by President Taft and became a part of the law.

Early in 1913 an agitation was begun to repeal that provision of the bill relating to the exemption of coastwise vessels. President Wilson made no formal statement of his views during the first year of his administration, but it was generally believed that he was in favor of repealing the section. His first statement in regard to the matter was made public in February, 1913. Senator O'Gorman, coming from a conference with the President, expressed the opinion that no action would be taken in 1914. These remarks were given to the press and were brought to the attention of the President, who, on the following day, said emphatically that he desired the repeal of the exemption, and that Senator O'Gorman could not have received from any conversation with him an impression that he was in favor of delay. He declared that he expected that action would be taken by Congress at this session and that he preferred repeal to the two years' suspension proposed in the Adamson resolution. On the same day, in a letter to William L. Marbury, of Baltimore, he said: "With regard to the question of Panama Canal tolls, my opinion is very clear. The exemption constitutes a very mistaken policy from every point of view. It is economically unjust; as a matter of fact, it benefits for the present, at any rate, only a monopoly; and it seems to me to be in clear violation of the terms of the Hay-Pauncefote treaty."

At a joint session of the Senate and the House on March 5, President Wilson read a brief message urging the repeal of the provision exempting coastwise shipping from the payment of tolls. This message was as follows:

"I have come to you upon an errand which can be very briefly performed, but I beg that you will not measure its importance by the number of sentences in which I state it. No communication I have addrest to the Congress carried with it graver or more far-reaching implications to the interest of the country, and I come now to speak upon a matter with regard to which I am charged in a peculiar degree, by the Constitution itself, with personal responsibility.

"I have come to ask for the repeal of that provision of the Panama Canal Act of Aug. 24, 1912, which exempts vessels engaged in the coastwise trade of the United States from payment of tolls, and to urge upon you the justice, the wisdom, and the large policy of such a repeal with the utmost earnestness of which I am capable.

"In my own judgment, very fully considered and maturely formed, that exemption constitutes a mistaken economic policy from every point of view, and is, moreover, in plain contravention of the treaty with Great Britain concerning the Canal concluded on Nov. 18, 1901. But I have not come to you to urge my personal views. I have come to state to you a fact and a situation. Whatever may be our own differences of opinion concerning this much-debated measure, its meaning is not debated outside the United States. Everywhere else the language of the treaty is given but one interpretation, and that interpretation precludes the exemption I am asking you to repeal. We consented to the treaty; its language we accepted, if we did not originate it; and we are too big, too powerful, too self-respecting a nation to interpret with too strained or refined a reading of words our own promises just because we have power enough to give us leave to read them as we please.

"The large thing to do is the only thing we can afford to do, a voluntary withdrawal from a position everywhere questioned and misunderstood. We ought to reverse our action without raising the question whether we were right or wrong, and so once more deserve our reputation for generosity and the redemption of every obligation without quibble or hesitation.

"I ask this of you in support of the foreign policy of the Administration. I shall not know how to deal with other matters of even greater delicacy and nearer consequence if you do not grant it to me in ungrudging measure."

On March 6 the House committee reported by a vote of 14 to 3 a bill repealing the exemption clause.

The report was accompanied by a minority report from the committee in which the assertion was made that the proposed repeal would compel the United States government to pay tolls on battleships and revenue cutters. This was answered by Representative Adamson, chairman of the committee, who pointed out that the tolls, if paid, would be received by the government itself.

Debate on the bill was begun in the House. The advocates of the bill introduced a resolution limiting debate, which was opposed by Speaker Clark and other prominent members of the House, but was carried by a vote of 200 to 172. This was considered to be a test vote and a forecast for the passage of the bill. In this initial vote, 57 Democrats opposed the bill limiting debate, and 8 Republicans voted for it. In the debate on the bill which followed, much bitterness was shown, Speaker Clark being severely criticised by several representatives for his opposition to the President, it being alleged that this opposition was the result of ill-feeling on the part of Mr. Clark as a result of his defeat by President Wilson in the nominating convention in 1912. The leader of the House, Mr. Underwood, spoke against the repeal. In the Senate also, debate was carried on at the same time. Senator Owen of Oklahoma spoke at some length for repeal and was opposed by Senator O'Gorman of New York and Senator Chamberlain of Oregon.

Debate on the measure concluded in the House on March 31, when the bill was passed by a vote of 247 to 162. For the bill, 220 Democrats, 25 Republicans, and 2 Progressives voted. Against it were 52 Democrats, 17 Progressives, and 93 Republicans. On the last day of the debate, more than 40 speeches were made, among which the most dramatic and interesting was that of Speaker Champ Clark, who made an impassioned address in which he defended his course in opposing the measure and attacked the provisions of the bill.

On April 29, by a vote of 8 to 6, the Senate Committee on Interoceanic Canals reported to the Senate, without recommendation, favorable or otherwise, the House bill repealing the act exempting American coastwise shipping from the payment of tolls. With it was reported, also without recommendation, an amendment proposed by Senator Simmons, saying that "neither the passage of this act, nor anything therein contained, shall be construed or held as waiving, impairing, or affecting any treaty or other right possessed by the United States." Of the members of the committee, 5 Democrats and 3 Republicans voted for a favorable report, while 3 Democrats and 3 Republicans voted in the negative. A motion to report with a recommendation that the bill be rejected, was defeated by 5 to 9. At the beginning of the debate on the bill in the Senate, Mr. Norris, of Nebraska, offered an amendment providing that the question should be submitted for arbitration at The Hague. Senator Borah of Idaho offered a resolution reciting the declarations of party platforms and presidential candidates in the campaign of 1912, and providing for a postponement of action on the bill until after the Congressional elections. This, he said, would give the voters of the country an opportunity to make a final decision.

On June 11, the Exemption Bill was passed by the Senate by a vote of 50 to 35. In its original form, as it came from the House, the bill was very brief, providing merely for repeal of the words: "No tolls shall be levied upon vessels engaged in the coastwise trade of the United States." The Senate, however, added, first by a vote of 50 to 24, and later by a vote of 57 to 30, the amendment proposed by Senator Simmons, referred to above. This amendment is as follows:

"Provided, that the passage of this act shall not be construed or held as a waiver or relinquishment of any right the United States may have under the treaty with Great Britain, ratified Feb. 21, 1902, or the treaty with the Republic of Panama, ratified Feb. 26, 1904, or otherwise, to discriminate in favor of its vessels by exempting the vessels of the United States or its citizens from the payment of tolls for passage through said Canal, or as in any way waiving, impairing, or affecting any right of the United States under said treaty, or otherwise, with respect to the sovereignty over, or the ownership, control and management of, said Canal, and the regulation of the conditions or charges of traffic through the same."

With this amendment attached, the bill was returned to the House, where it was accepted by a vote of 216 to 71. The bill was then sent to the President for his signature. It was known that he was not favorably inclined toward the amendment, but he signed the bill.

PANAMA EXPOSITIONS. See EXPOSITIONS.

PANAMA-PACIFIC EXPOSITION ART EXHIBITION. See PAINTING AND SCULPTURE.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION. See EXPOSITIONS; and TALL BUILDINGS.

PAN-AMERICAN CONFERENCE. At a meeting in Washington on October 7 the Board of Governors of the Pan-American Union decided to postpone indefinitely the fifth Pan-American Conference, which was to have been convened at Santiago de Chile in November, 1914. A resolution introduced by the Chilean Minister, Señor Suarez, was adopted by the Board of Governors, expressing the desire of the governments of the Pan-American Union to see peace speedily restored in Europe.

PAPER. The paper and pulp industry throughout the world naturally was seriously affected by the great European War. Exports from Germany and Austria ceased. Ordinarily such exports to Great Britain alone average annually over $6,000,000, while, in addition, Germany had a colonial and neutral nation trade averaging $18,000,000, and Austria-Hungary exported annually about $4,000,000 to such countries. Belgium was unable to manufacture paper, and in France and England the demand was materially lessened. Everywhere in Europe the decline was being felt, even in Norway and Sweden, which should have benefited by the curtailment of the supply of raw material and finished product from other countries. In Norway the production of cellulose in 1914 was 320,000 tons, of which 265,000 tons was sulphite bleached and unbleached, and 55,000 tons was sulphate, an amount about 14 times that of 1891, when the industry was becoming prominent with a production of 22,550 tons. The lack of water in Norway and Sweden affected manufacturing conditions during the year, and in Norway alone, at the end of 1914, there was a depression, due largely to the fact that English demands were less than anticipated, and other markets were cut off. In England scarcity of colors for colored papers and various chemicals used in the industry was felt, and like other industries depending on German chemicals, methods were discussed to relieve this condition. The Dutch paper makers were profiting from the German inability to supply the English market, while in Germany prices were advancing for both raw material and the finished product. On the 4th of December, 1914, Australia promulgated an order that news paper should pay an import duty of 10 per cent, with a single exception in favor of the product coming from Great Britain. The Dominion of Canada objected to this as interfering with a legitimate market, and in addition, proposed to levy a 10 per cent additional tax on imports.

In the United States, conditions in the American paper trade were not good, markets being restricted and the profits small. Imports of raw material either ceased altogether or decreased and, in the case of rag stock, it was proposed to use flax straw in combination with rag stock, and experiments to that end were being undertaken in various research laboratories. As regards imports, there was an increase in the imports of news print paper in 1914 over 1913 and also an increase in ground wood imported. Chemical unbleached pulp showed increased imports, while about the same amount of pulp wood was used as in the previous year. The exports of print paper showed a gain, while wrapping paper held its own in the export market, and writing paper and envelopes showed no increase. The printing and publishing business in 1914 was considerably less than in the previous years, and this naturally had its effect on the paper industry. Foreign trade, in the main, was satisfactory, but there was a decrease in the domestic markets. The American Paper and Pulp Association, which includes in its membership the great majority of the paper manufacturers, reported that of an ordinary production capacity of its members of 1,244,588 tons, there was actually produced 1,134,486 tons of news print paper, and, of this amount, 1,122,912 tons were shipped. As regards tissue paper, the same association reported that of a normal production of 81,226 tons, 76,506 tons were actually made, and, of this amount, 75,423 tons were shipped. Of wrapping paper 619,446 tons represented the normal capacity, while the actual production was 551,542 tons, and, of this amount, 545,547 tons were shipped. In board the normal production for the year was 952,681 tons, and, of this amount, 786,490 tons were made, and 780,561 tons were shipped.

As regards the writing paper business, both orders and production were about 80 per cent of normal, and all things considered, especially the financial depression and uncertain conditions due to the war, this section of the paper industry might be considered good. A difficulty was manifested in securing raw material, and stock, both imported and domestic, was in demand. The same condition held good in the cover industry.

In Wisconsin, safety first work was being done in the paper mills, and considerable investigation and legislation, bearing on the industry, was in progress. In New York, the State College of Forestry, at Syracuse, was maintaining a paper and pulp course, and it was proposed to have a forest products laboratory, which, in a building which had 14,000 square feet of floor space, would be devoted to experimental laboratories. This would be such a laboratory as the one maintained by the U. S. Department of Agriculture in Wisconsin.

In Canada, the pulp and paper industry was less disturbed than in other nations, and the production and price were maintained above the normal. Two new large mills, the Abiti Mills at Iroquois Falls, in Northern Ontario, with a capacity of 230 tons a day, and the Donacona Mills on the northern shore of the St. Lawrence were the only additions to the manufacturing capacity of Canada in news print of 1914. Other mills, however, were in process of construction, notably that of the Bathurst Lumber Company at Bathurst, New Brunswick, which was to be opened in July, 1915. The total news print production of Canada had developed to a point where it exceeded 1600 tons a day, and when the mills in course of construction were completed, would be about 2000 tons a day, or practically half of that of the United States. It was estimated that the capital invested in the pulp and paper manufacture in Canada, in the decade ending 1914, had increased from $20,000,000 to $60,000,000, and the value of the product, from $9,000,000 to $28,000,000. The amount of pulp manufactured into news prints in Canada per annum, was estimated at 480,000 tons, and about 600,000 tons gross of pulp wood were annually consumed.

Among the items of interest in the paper trade was the fact that Japan sent to France paper linings for military uniforms, and also that the manufacturing of thin Oxford paper, which once was confined exclusively to England, was now made in other countries. It was stated that such a product could be made from 80 per cent best bleached white linen, 10 per cent best white bleached cotton, 5 per cent of bleached straw pulp, 2 per cent of the finest white loading, i.e., talc, and 3 per cent of waste, the process involving the boiling of the rags with 1 to 2 per cent of soda, at a pressure of 3 atmospheres, and then carefully washing and boiling with 1 to 2 per cent of chlorine until snow white.

PAPUA, TERRITORY OF. (Formerly BRITISH NEW GUINEA.) A dependency of the Commonwealth of Australia, consisting of the southeastern part of the island of New Guinea together with various small islands (Woodlark, D'Entrecasteaux, Louisiade groups, etc.). The total area is estimated at 90,540 square miles. It has been generally assumed that the native population is upwards of 400,000 in number, though recent estimates place it at a lower figure, e.g., 271,000. The white population in 1912 was 1064. The seat of administration is Port Moresby, with about 1600 native, 425 white, inhabitants. The principal industry in which the whites are engaged is alluvial gold mining. Gold declared at the customhouse for export in the year 1907–08 was valued at £52,837, in 1908–09 £54,969, in 1909–10 £59,427, in 1910–11 £63,705, in 1911–12 £49,316. Cultivated products include coconuts, rubber, and sisal hemp. The natives are compelled by the government to plant coconuts for food. There are many indigenous products of great economic possibilities. Local revenue, imports, exports, and shipping entered and cleared (in tons) have been as follows, in fiscal years:

	Rev.	*Imps.*	*Exps.*	*Tons*
1902-03	£19,107	£62,367	£62,391	50,890
1907-08	26,019	94,061	80,616	183,772
1909-10	34,822	120,177	100,599	256,286
1910-11	45,972	202,910	117,410	258,122
1911-12	51,034	235,369	99,990	275,803
1912-13	43,346	218,323	128,016	306,478

Besides Port Moresby, the ports of entry are Samarai, Bonagai (in Woodlark Island), and Daru. Expenditure in 1911–12 amounted to £81,172 and in 1912–13 to £85,170. Lieutenant-Governor in 1914 (and since 1908), John Hubert Plunkett Murray, who acted also as chief judicial officer.

PARAGUAY. An interior republic of South America, bounded by Bolivia, Brazil, and Argentina. Capital, Asunción.

AREA, POPULATION, ETC. The country regarded as Paraguay proper lies between the Paraguay and Upper Paraná rivers. In addition Paraguay lays claim to a large area in the Chaco region, between the Paraguay and Pilcomayo rivers, but the claim is disputed by Bolivia. In 1913 a territorial status quo was agreed upon by Paraguay and Bolivia, pending a treaty in settlement of the dispute or submission of the case to a court of arbitration. The disputed boundary gives rise to widely varying estimates of area; the extent of territory which seems to be undoubtedly Paraguayan is stated at 253,100 square kilometers (97,722 square miles). The population cannot be stated, even approximately, with assurance. An estimate of 1911 placed it at 800,000; some observers are inclined to think that this figure is too large. The population is largely a mixture of Guarani, Spanish, and negro. There are also many persons of pure, or nearly pure, Guarani blood. The largest town is Asunción, whose population has been estimated at 84,000 (in 1914 it was said to be "rapidly approaching 100,000"); Villa Rica, about 90 miles southeast of Asunción, is supposed to have some 30,000 inhabitants; Concepción, about 135 miles north of Asunción, 25,000; Carapeguá, 15,000; Luque, 15,000. Immigration is small, though there appears recently to have been an increase. Immigrants from 1882 to 1910 are reported to number 18,286; in 1910–11, 418; in 1911–12, 605.

EDUCATION is free and nominally compulsory. There are reported about 800 public schools, with over 50,000 pupils. In addition, there are a few private schools, some of which are subsidized by the government. At Asunción is a national college, with over 500 students. Roman Catholicism is the State religion.

PRODUCTION AND COMMERCE. Soil and climate favor the production of various tropical and all the important subtropical crops, but economic progress has been retarded by internal conflicts and by the alienation of large blocks of land to foreign capitalists and syndicates. Grazing is an important industry, but might be developed much beyond its present proportions; an estimate published in 1914 places the number of cattle at 4,000,000. The leading products of the soil are yerba maté, tobacco, corn, beans, alfalfa, manioc, and various fruits, especially oranges. Cotton and sugar cane are also cultivated. Mining and manufacturing are little developed.

The reported values of imports and exports have been as follows, in thousands of pesos (peso = 96.47 cents):

	1908	*1909*	*1910*	*1911*	*1912*	*1913*
Imports	4073	3788	6248	6479	5283	5351
Exports	3782	5137	4785	4829	4211	5631

The largest imports are cotton goods, foodstuffs, and hardware. Leading exports in 1912 are reported as follows: hides, 1,082,646 pesos; woods, 877,037; yerba maté, 500,998; fresh fruits, 1,283,962; tobacco, 442,440. There is also a considerable export of quebracho extract. In the import trade of 1912, Germany stood first, the United Kingdom second, and Argentina third; in the export trade, Argentina first (over one-half), Germany second, and Uruguay third—exports to other countries are comparatively unimportant. However, the exports accredited to Argentina and Uruguay in large part are finally forwarded to Europe and the United States.

COMMUNICATIONS. The length of railway in operation in 1913 was 468 kilometers (291 miles). Asunción, the capital, is connected by rail with Buenos Aires, the capital of Argentina. The first through train left Buenos Aires Oct. 3, 1913, on a 50-hour schedule. The distance by rail between the two cities is 1518 kilometers, of which a distance of 376 kilometers is over the Paraguay Central Railway, 598 kilometers over the Northeastern Argentine Railway, 443 kilometers over the Entre Ríos Central Railway, and 101 kilometers over the Central Railway of Buenos Aires. Between the river towns of Zárate and Ibiquy, in Argentina, trains are transported across the Paraná on ferry boats, and again, across the Upper Paraná, from the Argentine town of Posadas to the Paraguayan town of Encarnación. During 1914 a branch of the Paraguay Central Railway was under construction eastward from Borja, a town a short distance south of Villa Rica; it is planned to extend this railway to a point on the Upper Paraná opposite the Brazilian town of Iguassú. There are about 2500 miles of telegraph line and 385 post offices.

FINANCE. The budget for 1913 showed estimated revenue of 3,248,000 pesos gold and 21,688,200 pesos paper, and estimated expenditure of 1,862,582 pesos gold and 48,301,645 pesos paper; for 1914, estimated revenue of 3,859,500 pesos gold and 28,185,400 pesos paper, and estimated expenditure of 1,767,961 pesos gold and 67,090,242 pesos paper. The gold peso is worth 96.47 cents; the paper peso was worth about 7 cents in 1913 and about 5 cents in 1914. For 1914, import duties were estimated at 2,616,000 pesos gold; export duties, 837,000 pesos gold; direct taxes, 20,093,400 pesos paper. Public debt as reported for Dec. 31, 1913: foreign, 3,914,138 pesos gold; internal, 349,120 pesos gold and 67,744,260 pesos paper (including outstanding paper money); floating, 695,515 pesos gold and 13,996,890 pesos paper.

GOVERNMENT. The legislative power is vested in a Congress of two houses, the Senate and the Chamber of Deputies. Senators (13 in number) are elected for six years and Deputies (26) for four years by direct vote. Constitutionally the President and Vice-President are elected for four years by indirect vote. There is a cabinet of five members. The President in 1914, for the term ending Aug. 15, 1916, was Eduardo Schaerer; Vice-President, Pedro Bobadilla.

At the close of the year Col. Patricio A. Escobar led an insurrection against the government and made a prisoner of the President, Dr. Eduardo Schaerer; but the rebellion speedily collapsed, and Dr. Schaerer was restored to power. See also UNITED STATES; INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

PARALYSIS, INFANTILE SPINAL. See POLIOMYELITIS.

PARCEL POST. See UNITED STATES, *Post Office*.

PARESIS, GENERAL, OF THE INSANE. See INSANITY.

PARIS FLOOD PREVENTION. See FLOOD PREVENTION.

PARK, ROSWELL. An American surgeon, died Feb. 15, 1914. He was born in Pomfret, Conn., in 1852 and was educated in private schools, at Racine College, and Northwestern University, taking the degree of M.D. from the latter in 1876. From 1877 to 1879 he was demonstrator of anatomy at the Woman's Medical College at Chicago, and from 1879 to 1882 was adjunct professor of anatomy at the Northwestern University. From 1883 to the time of his death he was professor of surgery at the University of Buffalo, and was surgeon to the Buffalo General Hospital. When President McKinley was shot on Sept. 7, 1901, Dr. Park, who was then recognized as one of the world's greatest surgeons, was among the first called. He was the author of: *Lectures on Surgical Pathology* (1891); *History of Medicine* (1897); *Text Book of Surgery* (1896); *Principles and Practices of Modern Surgery* (1907).

PASTEURIZING MILK. See DAIRYING, *Market Milk*.

PAU, PAUL. See WAR OF THE NATIONS.

PAVEMENTS. See ROADS AND PAVEMENTS.

PAYNE, SERENO ELISHA. Representative in Congress from New York, died Dec. 11, 1914. He was born in Hamilton, N. Y., in 1843, and graduated from the University of Rochester in 1864, being admitted to the bar two years later and beginning the practice of law at Auburn. From 1867 to 1871 he was city clerk of that city and was supervisor in 1871–72. From 1873 to 1879 he was district attorney of Cayuga Co., and from 1879 to 1882 president of the board of education at Auburn. His interest in politics was aroused while he was still a young man, and, with the exception of two years, he held office from 1868 down to the time of his death. He was elected (1883) to the Forty-eighth Congress and was reëlected to every succeeding Congress, with the exception of the Fiftieth. He was one of the foremost authorities on questions connected with the tariff, and assisted in formulating every Republican tariff bill which was undertaken during his term in the House. As Chairman of the Ways and Means Committee of the House he had charge of the so-called Payne-Aldrich Tariff Bill in that body. Mr. Payne was one of the House leaders while the Republicans were in power, and had great influence in the shaping and passing of legislation. He was a conservative Republican and was never affected by any of the reform movement in his party. He received the unusual honor of a State funeral in the House.

PEABODY MUSEUM. In the year 1914 the University Museum building, popularly known as the Agassiz Museum, was completed by the erection of the last section of the south wing. The structure now forms three sides of a hollow square as designed by Louis Agassiz in 1859. The new addition belongs to the Peabody Museum and more than doubles its exhibition space, besides adding new laboratories, new offices, storage and work rooms, and many other improvements.

The titles of the officers in the Museum have in several cases been changed, as follows:

Dr. A. M. Tozzer, Curator of Middle America.

Dr. A. V. Kidder, Curator of North American Archæology.

Dr. E. A. Hooton, Curator of Somatology.

Mr. S. J. Guernsey, Assistant Curator of Archæology and Ethnology.

Mr. R. F. Carroll, Assistant Librarian and Assistant Secretary.

Mr. Orric Bates has been appointed Curator of African Archæology and Ethnology.

The researches in the field have been as follows:

Dr. Tozzer spent the winter in Mexico as Director of the International School of Archæology and Ethnology. He was accompanied by Mr. Clarence L. Hay, Harvard Fellow. The greater part of the time was spent in the excavation of a temple and house site near Mexico City.

Dr. R. E. Merwin, Field Director of the Central American Expedition of 1913–14, was accompanied by Mr. C. W. Bishop, Harvard Fellow. Explorations were made along the eastern coast of Quintana Roo, Mexico, and the ruins of four ancient cities, previously unknown, in the Peten District of Guatemala, were investigated.

Mr. F. H. Sterns has continued his investigations of the prehistoric sites in Nebraska. This season he has explored a series of habitation sites which are much older than the prehistoric sites heretofore discovered and seem to belong to a different people.

Mr. Ernest Volk has had unusual opportunities during the past year for the continuation of his researches in the glacial deposits about Trenton, N. J. The renewed interest in this research, from a geological and archæological point of view, is of great importance to the much discussed question of glacial man in America.

Dr. A. V. Kidder was accompanied by Mr. S. J. Guernsey on his two-months' trip to northern Arizona where a group of seven cliff-houses, two burial caves, and a small cemetery were explored. Plans and photographs were made and a good collection representing the archæology and ethnology of the region was secured for the Museum.

Dr. Charles Peabody made a reconnoissance trip in Palestine and Syria. In July he examined sites near Jerusalem, notably Mt. Skopus, and later continued his work in the neighborhood of Beirut. Excavations were made in the caves of the Dog River and of Antelias. Specimens of flint were numerous and good and there were in place numerous contemporary shells and animal bones, not always in a state of good preservation. After August 16, he was forced by the disturbance caused by the European War to discontinue researches in this region. During the month of September he carried on investigations of the sites in Suffolk, Kent, Sussex, Surry, Wilts, and Dorset in England. Among the more important single sites, the famous palæolithic station of Knowle Farm, Savernake Forest, near Marlborough, was especially rich in specimens. The collections brought to the Museum by Dr. Peabody are of great importance to the European exhibit and furnish the first large collection from Palestine.

Dr. E. A. Hooton was sent to England on a special expedition for the Museum, and remained there for a month, when he was forced to discontinue the work on account of the disturbed condition of the country. While there he succeeded in examining a group of barrows, eight of which were round barrows dating from the late Bronze Age, and one long barrow excavated contained fragmentary remains of skeletons in addition to a quantity of Neolithic potsherds. From a neighboring gravel pit, Knowle Pit, Savernake, Wilts, a series of River Drift implements was obtained. Dr. Hooton was assisted by Mr. O. G. S. Crawford and by Mr. A. W. Carpenter.

Mr. Oric Bates, during the winter, was searching for Libyan remains in the littoral of the desert west of Egypt, where he found a distinct and hitherto unknown group of archæological objects. He has sent to the Museum a small collection of Sudanese material, a representative collection of Fayum flints and a collection of Libyan objects secured by his excavations.

The Museum has been very fortunate in its gifts of money, collections, and books during the year. Its special library is becoming more and more useful to students in anthropology. See ANTHROPOLOGY; ARCHÆOLOGY.

PEACE. See INTERNATIONAL ARBITRATION AND PEACE.

PECK, HARRY THURSTON. An American scholar, educator, and writer, born in Stamford, Conn., Nov. 24, 1856, died March 23, 1914. He was educated in private schools and at Columbia College, graduating in 1881 after a brilliant undergraduate career, during which his literary and editorial gifts had already attracted wide notice. After graduation he was appointed tutor in Latin and for a time in Semitic languages at Columbia, succeeding to the professorship of the Latin Language and Literature on the death of Prof. Charles Short in 1886, and to the Anthon professorship in 1904, retiring in 1910.

As a Latinist, Dr. Peck was distinguished by a rare familiarity with the content of Latin literature, in the interpretation of which his wide range of knowledge made him a stimulating instructor. In this field he published: *The Semitic Theory of Creation* (1886); *Latin Pronunciation* (1889); *Suetonius* (1889); *Roman Life in Latin Prose and Verse* (with R. Arrowsmith, 1895); a sympathetic translation of Petronius, *Trimalchio's Dinner* (1899); and *A History of Classical Philology* (1911). He was also editor-in-chief of *Harper's Classical Dictionary*, and co-editor of the *Students' Series of Latin Classics* and *Columbia University Studies in Classical Philology.* In addition to his professional works, his versatility, a strong journalistic bent, and a style of unusual brilliance brought him wide recognition in more general fields as critic, editor, essayist, poet, historian, and prolific contributor to periodicals. He was the first editor-in-chief of the *Bookman*, to which he contributed the *Letter Box*, and continuously a member of its staff from 1895 to 1906; editor of the *International Cyclopædia* and co-editor of the NEW INTERNATIONAL ENCYCLOPÆDIA; editor of Appleton's *Atlas of Modern Geography* (1892); co-editor of the *Library of the World's Best Literature*, and of *Masterpieces of Literature;* literary editor and editorial writer on the New York *Commercial Advertiser* (1897–1901); and editorially associated with *Munsey's* and with several works of reference. In 1889 he published, under the name of Rafford Pyke, a remarkable child's story book, *The Adventures of Mabel*, and a similar collection, *Hilda and the Wishes*, in 1907. He also published two volumes of essays, *The Personal Equation* (1899) and *What is good English* (1899); *Greystone and Porphyry*, collected poems (1899); *The Life of Prescott* (1905); *Twenty Years of the Republic* (1906), a notable collection of political personalia covering the period from the first term of President Cleveland to 1905; *Literature* and *Studies in Several Literatures* (1909); and *The New Baedeker* (1910), a work of keen insight and fresh point of view. His magazine and newspaper articles, covering many fields, aroused wide popular interest through their originality and forceful style, and gave rise to much discussion. Dr. Peck was fearless as a controversialist and impatient of educational or literary pretense, against manifestations of which he wrote with vigor and effect. During his last years his powers were gradually obscured by disease which resulted in his death at Stamford in 1914.

PÉGUY, CHARLES PIERRE. A French author and editor, killed on the battle line in France in October, 1914. He was born in 1873 in Orleans. In 1900, after he had settled in Paris, he founded and became the managing editor of *Cahiers de la Quinzaine*, a supposedly fortnightly periodical, in which he wrote as a religious mystic, although admitting to his columns contributions from widely different points of view. He soon became one of the leaders in the new reactionary school of French poetry, the school in whose literary background figured the Church and the monarchy, though the latter was implied rather than distinctly avowed. Péguy's polemical articles were mainly protests against any departure from religious principles as the life and ruling power of society. The temperament which turned him toward the Christian examples of mystic faith and singleness of devotion surely served him well in the choice and mission of his later prose and poetry. He found a ready response to their appeal. His books were rapidly sold. The eagerness with which they were read was not the least notable of the many literary proofs that the traditional Catholic France still lived in the popular heart and was strong to assert its spiritual power against social license and the denial of religion.

His best-known works are: *Le porche du mystère de la deuxième vertu* (1911); *La tapisserie de sainte Geneviève et de Jeanne d'Arc* (1912); *Le mystère de Jeanne d'Arc*, written in luminous, rythmic prose; *Le mystère des saints innocents* (1912); *L'argent suite* (1913); and the poem *Eve* (1914). Péguy sometimes wrote under the pen names of Pierre Deloire and Pierre Baudoin. He was a laureate of the French Academy. On the outbreak of the European War in 1914 he promptly responded to the appeal of his country and went to the front.

PEIRCE, Benjamin Osgood. An American physicist and educator, died Jan. 14, 1914. He was born in Beverly, Mass., in 1854; graduated from Harvard College in 1876, and for several years following studied at Leipzig and Berlin. Returning to the United States he taught in the Boston Latin School in 1880–81, and in the latter year was appointed instructor in mathematics at Harvard University. He became assistant professor of mathematics and physics in 1884 and Hollis professor of mathematics and philosophy in 1888, holding the latter chair until the time of his death. He was a member of many American and foreign scientific societies, and published writings on mathematical subjects including: *Theory of the Newtonian Potential Function; Table of Integrals* (1899); and *Experiments in Magnetism*.

PELLAGRA. The first report of the Thompson Pellagra Commission was published in 1914. The commission was supported by funds donated by Col. Robert M. Thompson, of New York City, and its work undertaken in association with the Bureau of Entomology and the officers of the United States Public Health Service. Eight hundred and forty-seven cases were studied, at or near Spartanburg, S. C. The commission found that pellagra occurred in the cotton-mill-village population at a rate of 104 per ten thousand, as against 19 per ten thousand for the remainder of the country, and 16 per ten thousand for the rural districts alone. There was an excessive prevalence among farming classes in townships which have a relatively large mill-village population. The white population of the county had 45 cases per ten thousand, the negro only 9.5 per ten thousand. Even excluding the mill-village population, which is practically all white, the remaining whites still have a rate of prevalence of two and a half times that of the negro. The incidence among females was about three times as great as among males in mature life, but in children under 10 years of age, and adults over 45, the rate is about the same. The most significant fact in regard to occupation is the marked prevalence of pellagra among women doing housework. The excessive prevalence in the mill-village population occurs largely among women and children at home during the day. Among actual mill-workers the prevalence in the two sexes is about equal. Climatic conditions appear to influence the development of symptoms. If during the spring months the rainfall is high, the temperature low, and the number of rainy days greater than normal, the appearance of acute symptoms is delayed. It was also brought out that the disease was of a less virulent type than in former years; symptoms were quite mild and sometimes were confined almost entirely to the skin. A history of illness immediately preceding the development of symptoms was found in 59 per cent of the cases. As to diet, the most striking defect in the general dietary of the working classes appears to be the limited use of fresh meats; salt pork, especially bacon, being used as a substitute. The question of hygiene and sanitation, of house screens and flies, disposal of excreta, and the methods of food preparation, were all investigated without eliciting any new facts. From the standpoint of entomology, ticks, lice, bedbugs, cockroaches, horse flies, fleas, mosquitoes, buffalo gnats, house flies, and stable flies were considered in regard to their possible activities as carriers. The stable fly only, from its seasonable activities, wide distribution and abundance, in the rural districts, especially, seems to be the most likely offender. It is relatively long-lived, travels long distances, and bites only by day. The commission does not regard the evidence of transmission by blood-sucking insects as at all conclusive. They reject the maize theory and consider that pellagra is in all probability a specific infectious disease communicable by means at present unknown.

In almost direct opposition to these findings are the recent experiments in Rhodesia. Funk relates that when whole cornmeal was used as food there was no pellagra, while it was liable to develop when bolted meal was eaten. Nightingale's experience with 1210 cases confirmed this, although he calls the malady "zeism," not venturing to classify it as true pellagra. Funk advises the avoidance of bolted meal, dependence on whole grain and potatoes, and a diet rich in vitamins. He says that in the potato zone pellagra does not occur. Sambon still clings to his theory of insect transmission, and incriminates two species of gnats, the *Simulium* and the *Ceratopogonines*. Pellagra, he says, like malaria, has certain defined zones, and he can find no instance of direct transmission of the disease from one individual to another. Persons who go to live in a pellagra district contract the disease usually in the first year, while others, who work in the pellagra zone in the winter and leave it in the spring, escape infection. In Mississippi, during the first nine months of 1913, 3734 cases of pellagra were reported, with a mortality of 795 for the entire year. The cases among colored people were greatly in excess of those among the white population, but this is accounted for by the great preponderance of the former in this State. It will be seen from the above paragraphs that the broad question, as to whether pellagra was to be classed as a dietary or a communicable disease, had not been definitely answered.

PENANG. One of the Straits Settlements (q.v.).

PENNSYLVANIA. Population. The estimated population on July 1, 1914, was 8,245,967. The population in 1910 was 7,665,111.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	1,468,000	62,178,000	$45,390,000
	1913	1,468,000	57,057,000	41,081,000
Wheat	1914	1,312,000	28,747,000	24,697,000
	1913	1,286,000	21,862,000	19,894,000
Oats	1914	1,078,000	32,190,000	16,417,000
	1913	1,154,000	35,774,000	16,456,000
Rye	1914	280,000	5,040,000	4,188,000
	1913	280,000	4,900,000	3,626,000

		Acreage	*Prod. bu.*	*Value*
Barley	1914	7,000	196,000	$137,000
	1913	7,000	182,000	129,000
Potatoes	...1914	268,000	28,140,000	16,321,000
	1913	265,000	23,320,000	18,656,000
Hay	1914	3,141,000	*a* 4,020,000	58,290,000
	1913	3,141,000	4,146,000	61,775,000
Tobacco	...1914	38,100	*b* 47,995,000	4,080,000
	1913	38,900	46,680,000	3,501,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. Pennsylvania so far exceeds all other States in the value of its mineral products as to stand almost alone. Exclusive of the value of pig iron, coke, and other derived or secondary products not included in the total, the value of the mineral production is nearly one-fourth that of the entire country; and in 1913 it equaled the combined production of West Virginia, Illinois, Ohio, and California, the next four States in the value of their mineral product. Pennsylvania derives its mineral wealth almost entirely from nonmetalliferous mining operations. Except for a small amount of copper, it produces none of the precious or semiprecious metals, and the only other metal which figures in the total production of the State is iron, of which less than 500,000 tons of ore were produced in 1913. In addition, however, to its being the first State in the production of coal, Pennsylvania leads also in the manufacture of cement, the burning of lime, and the production of mineral paints, sand, slate, and stone. It is second in the value of clay products and natural gas, and sixth in the production of petroleum. Although not an iron-ore State, Pennsylvania is by far the leading producer of iron, which is obtained from the Lake Superior ores. The production in 1913 was 12,871,349 long tons, valued at $197,726,314. If the value of the pig iron made in Pennsylvania were added to the value of the other products of the State, the total value for 1913 would have exceeded $700,000,000, which is more than one-fourth of the value of the total mineral production of the United States.

There was more coal mined in the State in 1913, both anthracite and bituminous, than in any previous year in its history. The production reached the enormous total of 265,306,139 short tons, valued at $388,220,933. Of this 91,524,927 tons were anthracite, with a value of $195,181,127, and 173,781,217 tons were bituminous, valued at $193,039,806. The total tonnage broke the previous record for 1912 by 19,079,053 short tons, or nearly 8 per cent. The proportionate increase was about the same for both bituminous and anthracite. The gain in the value of anthracite, however, was $17,558,501, or about 10 per cent, over 1912 and in bituminous coal $23,669,309, or 14 per cent. There were employed in the anthracite mines in 1913, 175,745 men and in the bituminous mines 172,196 men. According to the estimates of the United States Geological Survey, the production of anthracite coal in 1914 was about the same as that of 1913. Second in importance among the mineral industries in the State was the manufacture of Portland cement, which is closely followed by the clay-working industry. The production of cement in 1913 was 28,060,495 barrels, valued at $24,268,800, compared with 27,625,340 barrels, valued at $18,945,835 in 1912. The value of the clay products, exclusive of raw clay mined and sold, increased from $21,537,221 in 1912 to $24,231,482 in 1913. The production of natural gas is fourth in importance. Pennsylvania was first in the production of this mineral until 1910, when it was surpassed by West Virginia. The value of the natural gas produced in 1913 was $21,695,845, compared with $18,539,672 in 1912. Up to 1894 Pennsylvania was the leading State in the production of petroleum, but it has since been surpassed by West Virginia, Texas, California, Illinois, and Oklahoma. On account of the higher grade of Pennsylvania's oil, however, it still ranks fifth in value of production. The output of petroleum in 1913 was 7,963,282 barrels, compared with 7,837,948 barrels in 1912. The value increased from $12,886,752 in 1912, to $19,805,452 in 1913. The production of limestone is the principal factor in placing Pennsylvania first as a producer of stone, though it is also first in the production of slate, sand and gravel, and lime. In 1913 the total value of the stone quarried, exclusive of slate and limestone made into lime, was $10,117,469, compared with $9,144,214 in 1912. The total value of the mineral products of the State, exclusive of pig iron, increased from $445,799,653 in 1912, to $506,466,759 in 1913.

TRANSPORTATION. The total railway mileage in the State in 1913 was 8339. The roads having the longest mileage include the Baltimore and Ohio, 632; Pennsylvania Railroad, 1048; Pennsylvania and Reading Railway, 603; New York Central and Hudson River, 496; Erie Railroad, 464; Lehigh Valley, 328. Of the total mileage, 5250 was mileage of 20 companies operating in the State but having their lines also outside the State, and 3089 was the mileage of independent roads entirely within the State.

EDUCATION. The total enrollment in the public schools of the State in 1914 was 1,401,325. The average daily attendance was 1,124,951, and the teachers numbered 39,596. The average salary paid to male teachers was $68.06, and to female teachers, $49.44.

FINANCE. The report of the State Treasurer for the year ending Nov. 30, 1914, shows a balance in the beginning of the year of $7,564,269. The total receipts for the year were $31,441,050 and the disbursements $31,578,111, leaving a balance at the end of the year of $7,427,208. The bonded debt of the State at the end of the year was $651,110. Against this there was in the sinking fund $811,733.

CHARITIES AND CORRECTIONS. The correctional and charitable institutions include the Eastern Pennsylvania State Institution for the Feeble-minded and Epileptic at Spring City; Home for the Training in Speech of Deaf Children Before they are of School Age at Philadelphia; Homeopathic State Hospital for the Insane at Allentown; Pennsylvania Industrial Reformatory at Huntington; State Hospital for the Criminal Insane at Fairview; State Hospital for the Feeble-minded of Western Pennsylvania at Polk; State Hospital for the Insane at Warren; State Hospital of the Northern Anthracite Coal Region at Scranton; and the Western Penitentiary at Pittsburgh. Under the control of the State charities are also the various county almshouses and jails. Semi-State institutions include a great number of hospitals and smaller institutions in various cities.

POLITICS AND GOVERNMENT. Although the Legislature did not meet in 1914 the year was a very important and interesting one in politics. Chief interest centred about the efforts to prevent the reëlection of Senator Penrose, whose term expired March 4, 1915. Mr. Penrose has long been in control of the Republican machine in the State and has been held up as the type of the objectionable political leader; he was, however, renominated in the primary elections held on May 19. In the same elections Martin Brumbaugh was nominated by the Republicans for Governor. The Democrats nominated Congressman Palmer for United States Senator and Vance McCormick for Governor. Gifford Pinchot and William Draper Lewis received Progressive nominations for Senator and Governor, respectively. In addition to being a candidate on the Republican ticket Mr. Brumbaugh was candidate also of the Keystone and the Personal Liberty parties. Mr. McCormick, in addition to being a candidate on the Democratic ticket, was also a candidate for the Washington party. The Progressives were divided into the Bull Moose and the Roosevelt Progressive parties, in addition to which there was also an Industrialist party. All candidates made active and aggressive campaigns. Mr. Roosevelt took part in supporting Mr. Pinchot for the Senate and Mr. Lewis for Governor, making his first speech of the campaign at Pittsburgh on June 30, the most notable feature of his address being a talk on the Democratic administration's policies. On September 8, William Draper Lewis, nominee of the Progressive party for Governor, withdrew from the contest in order that the opponents of the Republican machine might unite on one candidate. In the elections held on November 3, the Republicans elected their candidate for Governor, Mr. Brumbaugh, by a vote of 590,701, compared with 452,882 for McCormick, Democrat, and 40,115 for Allen, Socialist. For United States Senator Senator Penrose was reëlected with 519,830 votes, compared with 266,436 for Palmer, Democrat, and 269,175 for Pinchot, Progressive. The total vote cast was 1,112,202, compared with 1,219,751 in the presidential election of 1912. The Republicans showed a gain of over 300,000 votes, the Democrats a gain of about 50,000 votes, and the Progressives a loss of about 150,000 votes. Mr. Brumbaugh carried the city of Philadelphia by about 100,000 votes and Senator Penrose carried the city by about 75,000 votes. The factors favoring the reëlection of Senator Penrose included the operation of a Democratic tariff, the liquor interests, and the disaffection existing in the Democratic party. Mr. Brumbaugh ran considerably ahead of Penrose in many sections, indicating his personal popularity. He is a well-known educator, was the organizer of Porto Rican schools, and was for many years superintendent of the public school system of Philadelphia. The Republicans elected 26 members to Congress and the Democrats 5.

STATE GOVERNMENT, 1915. Governor, Martin G. Brumbaugh, Republican; Lieutenant-Governor, Frank B. McClain, Republican; Secretary of the Commonwealth (to be appointed); Treasurer, Robert K. Young, Progressive; Auditor-General, A. W. Powell, Progressive; Adjutant-General, Thomas J. Stewart, Republican; Attorney-General (to be appointed); Superintendent of Public Instruction, N. C. Schaeffer, Democrat; Insurance Commissioner, Charles Johnson, Republican; Secretary of Agriculture (to be appointed).

JUDICIARY. Supreme Court: Chief Justice, D. Newlin Fell; Associate Justices, J. Hay Brown, Wm. P. Potter, John Stewart, Robert von Moschzisker, S. L. Mestrezat, and John P. Elkin—all Republicans, except Mestrezat. Prothonotary, Eastern District, James T. Mitchell; Prothonotary, Middle District, William Pearson; Prothonotary, Western District, George Pearson.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	11	41	52
Republicans	38	164	202
Progressives	1	1	2
Socialists	0	1	1
Republican majority	26	121	147

The representatives in Congress will be found in the section *Congress*, article UNITED STATES.

PENNSYLVANIA, UNIVERSITY OF. The total enrollment in all departments of the university in the autumn of 1914 was 7308. The faculty numbered 560. (For an account of the gifts received during the year see the article GIFTS AND BEQUESTS.) Beginning with the academic year in 1914–15, a School of Education was added to the university and it is believed that this school will play an important part in the curriculum. (For further notes in regard to the university during 1914 see UNIVERSITIES AND COLLEGES.) The library contains about 450,000 volumes. The provost is Edgar F. Smith, Ph.D.

PENNSYLVANIA ACADEMY, ANNUAL EXHIBITION OF. See PAINTING AND SCULPTURE.

PENNSYLVANIA STATE COLLEGE. An institution of higher learning at State College, Pa., founded in 1855. The number of students enrolled in the several departments in the autumn of 1914 was 2245, and the faculty numbered 241. The notable changes in the faculty during the collegiate year included the appointment of L. W. Rapeer, professor of education; Richard Ernesti, associate professor of industrial art; J. T. Marshman, professor of public speaking; Peal McDonald, instructor in home economics extension; and A. O. Vorse, *College News* editor. The gifts received during the year included scholarships in home economics from the Pennsylvania Federation of Woman's Clubs and from the Pennsylvania Daughters of the American Revolution. Scholarships were also received from J. G. White, of New York. The productive funds on June 30, 1914, amounted to $427,290, and the income for the same year amounted to $680,851. The library contains about 75,000 volumes and pamphlets. The president is Edwin E. Sparks, LL.D.

PENOLOGY. PRISON REFORM. Prison methods are undergoing a virtual revolution. There has been an evolution of the theories of criminology from those which laid extreme emphasis upon individual responsibility, and the consequent necessity of punitive and revengeful measures through certain forms of retributive justice, to the modern viewpoint which holds that the criminal is a product of social conditions. This viewpoint therefore is steadily modifying the whole attitude of society and prison officials toward methods of prison management. It has also brought forward various reforms for the care of delinquents outside of prison. The criminal is now viewed as a human being who has been deprived of normal human and social inheritance, and consequently must be put through a process of gradual rehabilitation. The new ideas have found expression in the honor system as applied to road-building in Colorado and various other States; in the doctrine of the golden rule in Kentucky; in the baseball league plan of California; in the classes in domestic science, sewing, cooking, and general housework in the Illinois Women's State Prison; in the fishing and berrying parties in New York; and the bond and card system of rewarding meritorious conduct in Ohio. Thus in various prisons one or more of the following reforms have been introduced: Abolition of stripes and punishment by dark dungeons; the abolition of head shaving; the retention of true names; free letter writing; healthful sports; no prison garb whatever; small daily wage; indeterminate sentence; and the parole system. Moreover it is seriously advocated that the ideal is no specific term of sentence and no penal institutions, but the application of reform methods by competent, well-trained men. The new methods were illustrated by the appointment of a psychiatrist by the Boston Municipal Court to assist in an intelligent classification and disposition of cases.

Among the recommendations for prison reform by the National Committee on Prison Labor are the following: More frequent omission of sentence for first offenses on slight charges, such as petty larceny; shortening of the term of imprisonment for good conduct; a modified indeterminate sentence; sanitary and comfortable accommodations within the prison; abolition of bars and appearance of forcible restraint; the reform or the abolition of the contract labor system; great extension of the resort to farm labor for convicts; segregation into classes of convicts according to degrees of guilt; payment to the prisoner for labor; and assistance in getting a position at the time of discharge. Along with the abolition of the contract labor system is advocated the substitution of the "State use" system or "State account" system. This latter system is well exemplified by the Minnesota binder twine plant, which is the best equipped factory for binder twine in the United States, and has the third largest output. This plant not only pays the expenses of the prison, which was pronounced by a recent commission from the German government as the best prison in Europe or America, but it credits every convict with a small daily wage. Such a wage not only gives the prisoner a certain economic independence on his release if he be single, but makes it possible for the prisoner, if he be married, to contribute to the support of his family during his incarceration.

New York. The recommendations of the New York State Committee on Prison Reform, of which Mr. Thomas M. Osborne was chairman, included the following: The conversion of Sing Sing prison into a receiving station for the observation and study of all convicts sentenced to a State prison, including medical examination and treatment, and a special effort to weed out all mental and physical defectives; the establishment of a Court of Rehabilitation; the extension of the indeterminate sentence to all convicts. The women's department of the National Civic Federation early in March outlined a large legislative programme which included the abolition of Sing Sing, the acquisition of industrial farms, the development of farms at Auburn, Clinton, Valitie, the latter for women. It also favored the indeterminate sentence, probation and parole, more self-government, educational labor systems, and the payment of prisoners. That the Sing Sing methods have responded very slowly to the newer ideals was revealed by the fact that in August a Saturday afternoon was for the first time devoted to sports, and in September the prisoners had their first "Sunday dinner" in place of the customary solitary meal. In the Auburn prison was organized, among the inmates, a mutual welfare league, which has brought about a large degree of self-government and personal freedom. This league was organized by Thomas M. Osborne who had imposed upon himself a week's imprisonment at Auburn; the story of this voluntary imprisonment is told in Mr. Osborne's book, *Within Prison Walls*. In November Mr. Osborne was appointed warden of Sing Sing prison from December 1. He at once introduced numerous reforms, including moving pictures on Sunday afternoons and a court of inmates to try fellow prisoners for infractions of rules. He granted 13 of 15 requests of the prisoners for various privileges, with the result that for the first time in the history of the prison no rules were broken in twenty-four hours.

Michigan. The State prison at Jackson, Mich., inaugurated an extension work department with the following objects: to keep young men out of prison; to aid paroled prisoners to meet the terms of their paroles; to prevent discharged prisoners from coming back. This work was suggested by the extension work of a State University. It was planned for the prison chaplain and others to go on lecture tours throughout the State to disseminate modern viewpoints on criminology and to organize local branches for the purpose of study and coöperation. These local branches were expected to be particularly valuable in relation to the young people and paroled prisoners.

Canada. One of the most modern and intelligent efforts to solve aright the problem of the care of prisoners is that of the latest Canadian prison, the Central Prison Farm at Guelph. This farm comprises 800 acres and will ultimately contain provision for 700 men. There is no enclosure to prevent the escape of prisoners, and the prison guards go unarmed. Nevertheless, the proportion of escapes per year equals only 1.5 per cent of the population. The prisoners themselves are performing 75 per cent of the building operations involved in constructing kitchen, dining hall, several dormitories, cell and administration buildings, officers' quarters, and other buildings, besides roads, bridges, aqueducts, and other improvements. The up-to-date sanitary condition of the cell buildings is shown by the southern exposure for each cell, and the provision of 800 cubic feet in each cell. This latter contrasts sharply with the 200 cubic feet of air space at Sing Sing. The prisoners, in addition to general farming, are taught a variety of city trades, including dairying, carpentry, shoe making, and work in a woolen mill, a machine shop, and a tile factory. Recreation of many forms is encouraged, including fishing, swimming, and baseball. In addition should be mentioned the controlling principle of the warden, which is that successful prison management means, first of all, successful supervision.

NATIONAL CONFERENCE. At the National Conference of Charities and Corrections (see CHARITIES) a session was devoted to Corrections. The report of the committee dealt with misdemeanants and showed that about 500,000 of them are every year committed to county and city prisons in the United States; that these jails are training schools for crime; that the fee system has many abuses; that idleness in jail is demoralizing; that the police are dominated by politics; and that prison reform has neglected the misdemeanant in favor of the felon. The programme of advance pointed to the humanizing of the courts by the newer penology; granting prisoners a chance to earn money to pay their fines; release on probation; the colony or farm system of outdoor employment; the indeterminate sentence; and parole. All of these reforms are in practice here and there; they should be extended over the entire country. Judge James A. Collins showed that considerate treatment had reduced jail and workhouse commitments in Indianapolis by 50 per cent without increasing the number of repeaters. The greatest interest attached to the descriptions of the prison farms at Occoquan, D. C., and Guelph, Ontario. Outdoor employment for women prisoners is being undertaken in Massachusetts and other Eastern States. Maj. J. B. Woods, Superintendent of the Virginia Penitentiary, declared that his experience in that State in employment of convicts on public roads, while of financial advantage, did not result in reforming the prisoners.

The aims of present prison reform as developed by this section were: more perfect police with a broader social viewpoint; prompt hearings for every one arrested; juvenile courts in all places; care and detention of juvenile delinquents outside of jail; probation system for adults as well as juveniles; separate trials for women; modification of the fining system so as to eliminate discrimination between rich and poor; classification of prisoners; separate individual confinement, and separation of sexes in county jails; abolition of fee systems; State control of all minor prisoners; industrial farms for convicted misdemeanants; release of misdemeanants on parole under supervision; and abolition of contract labor.

PROBATION. The sixth annual conference of the National Probation Association met at Memphis early in May with 81 delegates present. Round table discussions and papers dealt with defective delinquents both juvenile and adult; probation for adult offenders; juvenile courts, especially their lack outside of large cities; the separation of the social and the judicial functions of courts; social legislation suggested by probation work. The fact was emphasized that the criminal courts are no longer exclusively in the hands of the police and prosecutors, but are coming more and more under the scrutiny and control of a more informed public. A special committee was appointed to study the rural community and to report at the next meeting the advisability of engaging a field representative to direct research and education on need of probation for such communities.

THE NATIONAL COMMITTEE ON PRISONS AND PRISON LABOR, which is the new name of the National Committee on Prison Labor, met in June at Ardsley, N. Y. An executive committee was formed from experienced members in each State to determine the policy of the Committee in the different States. Special committees, whose chairmen with Adolph Lewisohn and E. Stagg Whitin constitute the council of management, were elected as follows: on Federal prisons, George Gordon Battle, chairman; on law, Prof. George W. Kirchwey; on social hygiene, James Bronson Reynolds; on organized labor, Collis Lovely; on honor men, Charles Henry Davis; on education, Mrs. John H. Flagler; on jails, Hastings H. Hart. The executive offices are at Columbia University under the direction of Julia K. Jaffray and Joseph D. Sears.

PENSIONS. See OLD-AGE PENSIONS; and UNITED STATES, *Pensions*.

PENSIONS FOR MOTHERS. For several years past agitation has been carried on for the pensioning of poor widows with minor children. This has been put forward as an alternative to direct outdoor relief by private or public charity, or to the separation of children and mothers, and the location of the former, either in children's homes and asylums, or in private homes of strangers. From this point of view the main argument for the pension plan was that the care of children by their own mothers was distinctly superior to their care by any other means. The urgency of this scheme was increased by the rapid progress of child labor legislation. This had the effect of throwing out of employment numbers of children, of ages 12 to 16, who were contributing something to the support of fatherless families. By 1912, 5 States had enacted pension laws; and by the close of 1913, 17 States and 2 cities had provided widows' pensions. These States were: California, Colorado, Idaho, Illinois, Iowa, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, Ohio, Oregon, Pennsylvania, South Dakota, Utah, and Washington; and the cities, Milwaukee and St. Louis. No new States enacted mothers' pension laws in 1914.

In *Colorado* an appropriation of $4800 was made in 1913, and $10,000 in 1914. During 1913, 26 families including 97 children were cared for. The average expenditure during the month of January, 1914, was $8.07 per child. The Colorado law, like those of several other States, applies to any parent unable to support a child; it sets no age limit to eligible children; and no maximum to the amount of pension. The *Pennsylvania* law became effective January, 1914. It provided $200,000 to be divided among the counties of the State, on condition that each county raise an amount equal to its gift from the State. The law applies to dependent mothers as well as widows; and fixes the legal working age, 14 years, as the pensionable limit. The scale of pensions is as follows: for mother and one child, $12 per month; mother and two children, $20; mother and three children, $26; and for each additional child, $5 additional.

The *Michigan* law applies to mothers only; it fixes the age limit at 17 years; and provides that the pension shall not exceed $3 per week for each child. In Wayne County in June, 1914, 65 mothers with 240 children were receiving an average of $1.39 per week per child. About 28 per cent of these children had been deserted by their fathers; about 60 per cent of the mothers were suffering from tuberculosis.

In *Massachusetts* the law became effective Sept. 1, 1913. During the first year 2967 mothers with 9229 children under 14 were given aid. The mothers included 2151 widows, and 816 others, of whom one-half were deserted wives. The law provides for a State appropriation equal to one-third of the total expenditures by towns and cities as approved by the State Board of Charity. In 1914 the State expense amounted to about $175,000, making a total of about $500,000 for the commonwealth. The average relief was $6 per week per family. It was estimated that the State's share in 1915 would be $250,000. The law, locally administered by overseers of the poor, has had the effect of stimulating them to constructive relief work.

In *Ohio* the 1913 law authorized pensions for widows, and mothers whose husbands were permanently disabled, imprisoned, or deserted for at least three years, provided there were minor children. State funds, however, were not made available until 1915; but in 1914 the county commissioners were authorized to transfer money to mothers' pension funds. Hamilton County (Cincinnati) thus appropriated $63,000. An advisory committee was formed, and sixty social workers coöperated in investigating the 1300 applicants. By November, there had been granted 358 pensions. In addition considerable constructive work was undertaken in the way of housing, health, domestic economy, recreation, reading, education, etc., for applicants.

The *Pennsylvania* law became effective February 1. Up to June 1 there had been 1369 applications, of which 431 were set aside, 759 were registered, and the remainder were under investigation. Most of those registered were identified with other agencies. In July, 77 families were receiving average pensions of $22 per month.

ROCKEFELLER FOUNDATION. In September the Rockefeller Foundation made a grant of $20,000 a year for ten years to the New York Association for Improving the Condition of the Poor, this fund to be used in providing pensions for dependent widows with families. This sum was sufficient to pension fifty families and provide $1200 for a family visitor. The association was then engaged in an effort to raise $100,000 with which to pension all of the five hundred dependent widows with children under its care. The pensions will be paid in weekly installments for not more than six months at a time; families pensioned must have been known to the association for six months; the coöperation of relatives, churches, and other agencies is to be secured.

This grant was the result of a special study of the effects of widows' pensions made for the Foundation by Mr. William H. Matthews, director of the Department of Family Welfare of the association. The association had adopted the "pension policy" on a rather extensive scale in 1913. Mr. Matthews then selected forty-three cases where adequate pensions had been given, and made a detailed study of the preceding and subsequent conditions. He found that the pension gave opportunity for education, health, and development, and a return in "the way of healthy, vigorous, red-blooded workers," and that the pension "is an insurance against under-vitalized, stunted, inefficient bodies, against the wreckage and wastage of future citizenship, against an increase in that part of our juvenile population that ever keeps busy the machinery of juvenile courts, truancy schools, reformatories, and other like institutions." Whether the benefited mothers did some work outside of their homes or worked at home, the pension system showed most beneficent results in better health and a better tone to family life. The study was strengthened by a comparison of 431 widows with dependent children also under the care of the association but not pensioned. Of these, 44 per cent worked away from home as against 17 per cent of the pensioned mothers. Many of the children were in reformatories; many others were in institutions for restoring health. There was frequent lack of food, shelter, and clothing, and an extensive amount of debility and degradation.

ARGUMENTS FOR AND AGAINST. The principal reasons advanced in favor of mothers' pensions are the following: There is great need of more adequate provision for working mothers with minor children, with no male breadwinner. The efforts of such mothers to keep their children at home results in overwork at low pay, running into debt, lack of proper nourishment and housing, and juvenile delinquency. The solution of the problem by placing children in institutions, or in private homes, is unsatisfactory. Social insurance cannot meet the situation because of the long time necessary to get it into effective working, and because desertion of fathers cannot be thus obviated. Pensioning mothers meets the situation; it is a just measure; it prevents family separations; it relieves relatives of unfair burdens; and mothers earn pensions by their services to the State. Pensions, moreover, are socially advantageous, since they result in better citizens, raise standards of living, and make child labor unnecessary. They are an advantage economically, because they are the cheapest way to care for both mothers and children, and they eliminate much of the expense of crime and delinquency. It is further argued that pension systems should be public rather than private, because of the paramount interest of the State in its future citizens; because adequacy and regularity are essential; and because private relief is believed to be more demoralizing than public.

Against. It is argued that the pension idea is wrong in principle since money will not make good homes. The need is grossly exaggerated. Pensioning mothers will prove harmful socially, because it will lessen the interest of private charities, friends and relatives, and thus destroy helpful personal relationships. Moreover, pensions are more degrading to self-respect than private aid. They would increase desertions and divorce; would take from mothers an interest in outside work which is often salutary; would discriminate against the provident in favor of the improvident. They are anti-eugenic in that they would increase the multiplication of the poorest stocks. The wide adoption of the pension policy would hinder the advance of various worthy reforms, such as industrial education, social insurance, and workmen's compensation. This policy will prove expensive as a result of investigations, administration, and a rapidly increasing class of dependents. Private charity is less costly; more efficient and personal in administration; and does not involve danger of restoring the long-since discredited system of extensive out-door relief.

PERAK. A State (the most northerly) of the Federated Malay States protectorate (q.v.). Perak is one of the oldest states in the peninsula, and since the appointment of a British resident in 1874 it has made considerable progress. It is watered by the Perak, the Kinta, Batang Padang, Bidor, Sungkai, Krian, Kurau, and Bernam rivers, with their tributaries. An extensive irrigation scheme has been completed in the Krian district, which renders 70,000 acres available for rice cultivation. Coconuts are grown, but the chief exports are tin and rubber. The chief mining districts are Larut, Kinta, Batang Padang, and Klian Intan. The production of tin ore in 1912 was returned at 22,640 tons; metal, 5767; value, £5,757,893. The State is traversed by the main railway line from Penang. The total mileage of completed roads is 751 of metaled, and 60 of unmetaled wagon roads, besides 871 miles of byways. Taiping is the capital, and Ipoh the commercial centre. The chief port is Teluk Ansom. Other towns are Kuala, Kangsar, Kampar, and Tapah. The State now includes the whole watershed of the Perak River. This territory, formally ceded to Perak by the Anglo-Siamese treaty of July 16, 1909, exceeds 1000 square miles in area and includes the tin mines of Klian Intan. The population of the new territory in 1909 was estimated at about 3000. The native ruler is Sir Idris Mersid-el-Aazam Shah. The British Resident in 1914, was R. G. Watson.

PERIM. A dependency of Aden (q.v.).

PERKINS, GEORGE DOUGLAS. An American editor and public official, died Feb. 3, 1914. He was born in Holly, N. Y., in 1840, but in his early boyhood removed to the West. He learned the printer's trade at Baraboo, Wis., and with his brother started the *Cedar Falls Gazette* in 1860. In 1862–63 he served as a private in the Thirty-first Iowa Regiment. From 1869 until his death he was editor of the *Sioux City Journal*. From 1874–76 he was a member of the Iowa Senate and was United States marshal for the Northern District of Iowa from 1882–85. He also served as a member of Congress from 1891 to 1899, and was delegate-at-large from Iowa to the Republican National Conventions in 1876, 1880, 1888, and 1908.

PERRY, JAMES HILLHOUSE. An American naval officer, died Dec. 5, 1914. He was born in 1842 in Troy, N. Y., and served in the Union navy throughout the Civil War. He retired from naval service at the close of the war, but at the outbreak of the Spanish War he reëntered the service and was made chief engineer on the battleship *Oregon*. He served until the close of the war, when he again retired from active service. Until August, 1904, he served on the advisory board of the bureau of steam engineering in Washington. He was chief engineer of the *Oregon* at the time of the famous voyage of that ship from San Francisco to the coast of Cuba.

PERSIA. An Asiatic monarchy lying between the Caspian Sea and the Gulf of Oman. Capital, Teheran. Estimated area, 1,645,000 square kilometers, or 635,135 square miles, carrying a population of about 9,000,000, of whom about 2,500,000 (Arabs, Kurds, Turks, and Leks) are nomads. There are about 8,000,000 Mohammedans of the Shi'ah sect and 800,000 of the Sunni sect. Teheran has about 280,000 inhabitants, Tabariz 200,000, and Ispahan 80,000.

PRODUCTION AND COMMERCE. The chief products for export, together with the imports for consumption, are shown in the table below, with values in the 1912–13 trade in thousands of krâns:

Imports	*1000 Kr.*	*Exports*	*1000 Kr.*
Cottons	186,190	Fruits	47,457
Sugar	188,978	Carpets	60,892
Tea	88,048	Cotton	98,848
Gold & silver bars		Fish	8,245
& coins	79,128	Rice	42,809
Petroleum	8,889	Gold & silver coins	27,428
Yarn	14,584	Gums	18,902
Flour	15,877	Opium	84,916
Woolens	19,892	Wool	11,800
Indigo, etc.	8,084	Cocoons	11,786
Haberdashery	6,667	Skins	12,675
Rice	8,610	Animals	8,885
Spices	8,217	Silk stuffs	6,689
Wool	8,761	Cottons	2,160
Animals	1,804	Hides	11,359
Matches	8,529	Silk	1,792
Silks	6,576	Wheat and barley	8,819
Tin, etc.	1,854	Pearls	8,540
Tobacco	2,569	Woolens	2,265
Copper and nickel	6,455	Drugs	8,688
Iron and steel	8,754	Timber	1,095
Mfrd. iron & steel	8,968	Tobacco	2,437
Timber	2,888	Dyes	1,820
Silkworm eggs	8,401	Eggs	1,299

The countries of origin and destination in the 1912–13 trade, values in thousands of krâns: Russia, 328,980 imports and 300,878 exports; United Kingdom, 86,382 and 34,328; British India, 66,799 and 22,270; Turkey, 23,389 and 37,927; Germany, 31,288 and 2928; France, 11,031 and 4829; Austria-Hungary, 8042 and 567; Belgium, 7929 and 408; Afghanistan, 4360 and 2443; Italy, 2738 and 8004; Oman, 1047 and 7378; China, 789 and 3474; United States, 947 and 6375; other, 2481 and 2376. The sea-borne trade passes chiefly through the ports of Bushire, Bunder Abbas, and Mohammerah, and by way of Bagdad. The British practically control Persian Gulf Shipping.

Traveling is mostly by caravan and transport by pack animals. There are eight miles of railway open.

FINANCE AND GOVERNMENT. The revenue, about half of which is derived from taxes levied in kind or in cash upon the laboring classes, fluctuates between 70,000,000 and 100,000,000 krâns. Other sources of revenue are land tax, customs, opium, salt, and lease of monopolies. No statement of expenditure can be made, except that it regularly exceeds the income. The collection and expenditure of all revenue is under supervision by a European treasurer-general. The Russian debt of 1900 amounted to 22,500,000 rubles at 5 per cent, payable in 75 years, and guaranteed upon the customs receipts other than those of the province of Fars and of the Persian Gulf ports; debt of 1902, 10,000,000 rubles at 5 per cent; British loan of 1911, £1,250,000 at 5 per cent. Floating debt, 104,870,000 krâns; annuities, 14,000,000 krâns.

The country is divided into 33 provinces administered by Governors-General appointed by the Shah; but the nomad tribes are ruled by their own chiefs, so far recognized by the central government as to be held responsible for the collection of the tribal revenue. In June, 1909, under British and Russian coercion, the then ruler, Mohammed Ali, restored the constitution and signed a new electoral law, by which law the election, subsequent to his abdication, was conducted. The national council (Mejliss) consists of 120 deputies. Each constituency elects three times the number of persons entitled to represent it in the Mejliss and these appoint the deputies. Elections were held in the autumn of 1913, for the first time since the dissolution of the council in December, 1911.

History. On July 21, 1914, the sixteen-year-old Sultan, Ahmed Shah, crowned himself as *Shahinshah* of Persia, thus ending the regency which had existed since the dethronement of his father, Mohammed Ali, some five years before. One of the ceremonies observed was the taking of a formal oath before the Mejliss (Parliament) to observe the Constitution. Since the deputies recently elected to that body had not yet arrived at the capital, 68 members of the former Mejliss heard the young prince with trembling voice take the oath: "I, Sultan Ahmed Shah, Emperor of Persia, swear on the Holy Word of God (the Koran) that unto my life's end I will be true to the terms of the Constitution and to the People, and will maintain the independence of my country; and this I will do with all my strength." In the afternoon, surrounded by the Diplomatic Corps and before many distinguished guests, Sultan Ahmed mounted the famous Peacock throne and gravely placed upon his own head the magnificently jeweled crown, while a Ulema chanted the opening *Surah* of the Koran, and outdoors a salute of 123 guns was fired.

Shortly after the coronation of Sultan Ahmed Shah, a Cabinet crisis was precipitated by the resignation of M. Mornard, the (Belgian) treasurer-general, who had become exasperated beyond all measure by the opposition which his fiscal policy had met with from the Russians in the province of Azerbaijan. Consequently in August a new Cabinet was formed with Mustaufi-el-Mamalek as grand vizier, Ala-es-Sultaneh as minister for foreign affairs, Moleshan-es-Sultaneh as treasurer, and Mukbir-es-Sultaneh as minister of justice.

A discussion which took place in the British House of Commons in May revealed the significant fact that Russian peasants were immigrating in large numbers into Northern Persia and converting the region into something very much like a Russian colony. About the same time it was stated that the Russian garrisons in Northern Persia aggregated over 12,000 men, and that Azerbaijan was completely under Russian control. The activity of the British in Persia was of a different nature. In May the British government decided to purchase 2,000,000 shares and £2,000-000 debentures in the Anglo-Persian Oil Company (which was formed in 1909 to work a concession covering about 500,000 square miles of Persian territory). By this step the government acquired a controlling interest in the company, with the object of providing the British navy with an ample supply of oil from the rich wells of Persia.

Early in November the Persian government declared its neutrality in the War of the Nations. See also International Arbitration and Peace, *Bryan-Wilson Treaties*.

PERU. A South American republic, on the Pacific coast between Ecuador and Chile. The capital is Lima.

Area and Population. Neither the territorial extent of Peru nor the number of its inhabitants can be definitely stated. There are unsettled boundaries involving many thousands of square miles. Pending the settlement and delimitation of these boundaries, one estimate of the area is 1,769,804 square kilometers (683,335 square miles); another estimate is 1,833,916 square kilometers (720,816 square miles). There is also reported a planimetric calculation showing the area at 1,137,000 square kilometers (438,996 square miles); this evidently excludes large areas of disputed territory, and, as much of this territory has long been in actual occupation by Peru, the figure is doubtless far below that which eventually will represent the republic's extent. The population, according to the 1876 census, was 2,624,872 (exclusive of the population of Tacna department, which now appears to be definitely attached to Chile). An estimate of 1896 placed the number of inhabitants at 4,559,550, and an estimate of 1913, at 5,800,000; there is reason to believe, however, that the present number is not greater than the 1896 estimate. Probably more than one-half of the population is Indian, and the larger part of the remainder mestizo. Lima is supposed to have about 150,000 inhabitants; Arequipa, 35,000; Callao, 34,500; Cuzco, 30,000; Ayacucho, 20,000; Iquitos, 20,000.

Education. Elementary education is nominally compulsory, but apparently the majority of children do not attend school, and illiteracy is prevalent. Public primary schools in 1913 are reported at 2253, with 3063 teachers. The attendance is about 150,000. In 1911, there were 27 national "colleges," with 4674 students enrolled, of whom 2077 were in preparatory courses. There are also a few high schools, private schools of various grades, and several institutions for technical or special instruction. At Lima is the University of San Marcos, founded in 1551, with faculties of law, medicine, theology, philosophy and letters, mathematics and science, and political and administrative science. There are also universities at Cuzco, Arequipa, and Trujillo.

Production and Commerce. Agricultural products of commercially greatest importance are sugar and cotton. In the northeastern districts are gathered large quantities of rubber, which constitutes one of the chief exports. Other products are rice, coffee, cacao, wheat, corn, tobacco, and cocoa. In 1911 and 1912 respectively the reported sugar output was 178,533 and 192,754 metric tons; alcohol and rum from sugar cane, 2,050,968 and 2,404,354 gallons; cotton, 38,389,535 and 37,565,130 pounds; cotton production in 1913, 52,344,640 pounds. Peru's mineral deposits have been its principal source of wealth. Copper and silver are the chief metals mined; to some extent gold, lead, coal, petroleum, and other minerals are exploited. The output of fine copper in 1912 was about 27,840 metric tons, and in 1913 about 27,940 tons.

Imports and exports have been as follows, in libras:

1908	*1909*	*1910*	*1911*	*1912*
Imports—				
5,311,973	4,298,627	4,980,697	5,488,247	5,157,686
Exports—				
5,478,941	6,192,671	7,074,076	7,416,028	9,438,581

Some of the principal imports in 1910 and 1911 were valued as follows, in libras: Metals and manufactures thereof, 449,200 and 1,001,592; cotton textiles and manufactures, 588,031 and 745,807; comestibles and condiments, 734,465 and 684,680; earthenware, glass, earths, coal, etc., 122,092 and 408,728; wool and manufactures, 213,387 and 321,119. The value of leading exports in 1910 and 1911, in libras: Sugar, 1,389,312 and 1,559,200; copper and silver bars, 1,236,694 and 1,210,903; cotton, 1,014,823 and 1,028,254; rubber, 1,278,674 and 537,087; straw hats, 121,078 and 441,318; wool, 409,143 and 405,288; guano, 181,582 and 278,388; gasoline, 7408 and 224,489; petroleum, 109,615 and 174,531; hides and skins, 124,498 and 143,196. The total mineral export in 1909 is reported at 1,663,424 libras, and in 1910, 1,922,460 libras. The table below shows for 1911 and (subject to revision) for 1912, imports and exports by principal countries, in thousands of libras:

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
U. Kingdom	1,720	1,199	2,466	2,517
United States	1,249	1,106	2,096	2,033
Germany	946	821	578	508
France	290	269	391	772
Italy	199	254	3	1
Belgium	334	245	102	106
Chile	77	196	1,843	895

The share of the principal ports in the imports and exports of 1911, was as follows, in thousands of libras: Callao, 3416 and 3189; Mollendo, 625 and 623; Iquitos, 455 and 496; Paita, 286 and 1210; Salaverry, 276 and 891; Eten, 166 and 514; Pisco, 126 and 260.

COMMUNICATIONS. In September, 1912, the length of railway in operation was 2766 kilometers (1719 miles). Railway under construction was reported at 5400 kilometers, but this figure includes projected lines, on some of which actual construction may never be begun. Telegraphs in 1912: lines, 15,000 kilometers; wire, 57,900 kilometers; offices, 317, of which 285 belonged to the State. There is a radiotelegraphic system, with stations at Iquitos, Masisea, Puerto Bermúdez, Lima, Callao, Pisco, Chala, and Ilo. Post offices in 1912, 781.

FINANCE. The standard of value is gold. The monetary unit is the libra, or pound, equivalent to the British pound sterling ($4.86656); it is divided into 10 soles. Revenue and expenditure in 1910 are reported at 2,795,775 and 2,685,322 libras respectively; in 1912, 3,425,543 and 3,493,629. The estimated revenue for 1914 was 3,547,836 libras, and estimated expenditure, 3,109,836 libras. Of the total estimated revenue, 1,505,112 libras were credited to customs The estimated disbursements were apportioned as follows: finance and commerce, 888,224 libras; war and marine, 832,386; administration, 510,613; justice and public instruction, 481,345; public works, 200,511; legislative, 107,943; foreign affairs, 88,814. The public debt recognized by the government, Jan. 1, 1913, was 4,023,006 libras.

ARMY. While military service between the ages of 20 and 50 is obligatory, and an active army, a first reserve, a second reserve, and a national guard are maintained, yet in actual practice the small standing army is recruited by voluntary enlistment or by recruits selected by lot, 2 years being served with the colors, and then 7 years in the first reserve, or until 30 years of age. The peace strength of the army is estimated at from 6500 to 8000 men. On a war basis this number might be increased to 40,000 men, and some authorities put the number as high as 100,000. All arms of the service are represented in the organization, which at one time was being reorganized by French officers.

GOVERNMENT. According to the constitution, the executive power rests with a President, who is elected by direct vote for four years, and is ineligible for the following term. There are two Vice-Presidents. The President is assisted by a Cabinet of six members. The legislative power devolves upon a Congress of two houses, the Senate and the House of Representatives. Senators (52 in number) and Representatives (116) are elected by direct vote for six years. On Sept. 24, 1912, Agusto B. Leguia was succeeded as President by Guillermo Billinghurst, for the four-year term; first Vice-President, Roberto Leguia.

HISTORY.

OPPOSITION TO PRESIDENT BILLINGHURST. President Guillermo E. Billinghurst, the Mayor of Lima, who had been elected to the presidency in 1912, famous both for his interest in the nitrate business and for his radical ideas of social reform, had aroused the most bitter opposition by his ruthless disregard of the constitution. From the beginning of his presidency he had been confronted by a hostile Congress, and instead of conciliating the congressional opposition, had goaded it to fury by repeated acts of violence. In July, 1913, he had not scrupled to use intimidation in order to secure the election of one of his protegés to the presidency of the Senate. He had promulgated the budget without sanction from Congress. When he attempted to bring about a new general election on the pretext of the illegality of the former election, the Liberals and the Democrats strongly protested. In reply, Billinghurst suspended *La Prensa*, the Opposition organ, and arrested some of his leading antagonists, including Don Carlos Leguia, brother of the ex-president. This arbitrary act was more than Congress could tolerate.

FEBRUARY COUP D'ÉTAT. With the approval, if not actually at the invitation of Congress, Col. Oscar Benavides, Señor Durand, and other military leaders utilized their control of the army to strike a *coup d'état* on February 4. At five o'clock in the morning President Billinghurst's residence was surrounded by troops; the President himself was made a prisoner, forced to resign, and later deported. Gen. Enrique Varela, the Premier, was killed while resisting the insurgents. About 50 other casualities occurred. Colonel Benavides immediately proclaimed himself head of the Provisional Executive, and assumed the portfolios of war and marine; the department of home affairs was taken over by Arturo Osores; justice, Rafael Grau; finance, José Balta; public works, Benjamin Boza; foreign affairs, J. M. Manzanilla. As the revolutionary government was accepted generally by the judiciary, the primate, the corporations, the army council, and the officers of the army and navy, recognition was promptly granted by the United States.

TRIUMPH OF BENAVIDES. Vice-President Roberto Leguia, however, not only refused to recognize the revolutionary junta as a legal government, but asserted that as Vice-President of the republic, he alone was entitled to succeed Billinghurst. In his anxiety to crush all opposition, Colonel Benavides was guilty of such unconstitutional conduct that two of his ministers resigned in protest, Señor Rafael Grau surrendering the portfolio of justice, and Señor José Balta the portfolio of finance. When Congress met on May 15 it elected Benavides President. But Leguia claimed that a majority of the members of Congress assembled at his residence and elected him President. There were thus two men claiming to be the legally elected President of Peru. Benavides triumphed, however, and obtained recognition from the Supreme Court, from the United States, and from the "A B C" powers. His Cabinet was reorganized as follows: president of the council, minister of war and of marine, General Muniz; foreign affairs, Don Fernando Gazzani; interior, Don Hildebrando Fuentes; justice, Don Luis Julio Menendez; finance, Don Luis Felipe Villaran; public works; Don Joaquin Capelo. The WAR OF THE NATIONS (q.v.) occasioned a financial stringency in Peru, and a thirty-day moratorium was declared, August 8. A Cabinet crisis ensued, with the result that a new ministry was constituted, on August 22, as follows: president of the council and minister of justice, Don Aurelio Souza; foreign relations, Don Fernando Gazzani; interior, Don Fernando Fuchs; treasury, Don J. F. Tudela y Varela; war and marine, Col. Augusto Bedoya; public works, Francisco A. y Paz Soldau. The Souza Cabinet offered its resignation early in November, but President Benavides refused to accept the resignation. In December, Colonel Abril held the post of war minister for two short weeks, but on December 31 he resigned, along with Fernando Fuchs, the minister of the interior.

In February it was announced that Peru and France would refer to The Hague Arbitration Court, the claims of certain French capitalists against Peru. A treaty of arbitration was signed with Venezuela. The Standard Oil Company, through a Canadian subsidiary, acquired a dominant position in the Peruvian oil industry. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

PETROLEUM. The petroleum production in the United States in the calendar year 1913, reached a total of 248,446,230 barrels, compared with 222,935,044 barrels in 1912. Although the product of 1912 exceeded all previous records, the yield of 1913 surpassed it by the greatest gain in any year since 1910. In fact, the increase of 1913 over 1912—more than 25,000,000 barrels—was greater than the total production in any year until 1880, and the output of 1913 equaled the total production of the United States for the first 25 years of the industry. The value of the product in 1913, was $237,121,388, compared with a value of $164,213,247 in 1912. In spite of the greatly increased production in 1913, the average price in that year was 95.4 cents a barrel, compared with 73.7 cents a barrel in 1912.

The great gains in production came from the Mid-Continent field and from California. The normal decline in the oil fields of New York and Pennsylvania was changed to a slight increase under the spur of greatly increased prices. The production of West Virginia and Ohio declined, but slightly. In Indiana the decrease was less than normal because of new developments in the western border of the State. In Illinois the decline was decided, and reflected the inability of the producers to continue the development of new pools. The following table gives the production in each of the States in 1912–13, with the quantity and average price per barrel:

TOTAL QUANTITY AND VALUE OF PETROLEUM PRODUCED IN THE UNITED STATES AND THE AVERAGE PRICE PER BARREL IN 1912 AND 1913, BY STATES, IN BARRELS

State	*1912* *Quantity*	*Value*	*Average price per barrel*	*1913* *Quantity*	*Value*	*Average price per barrel*
Alaska	(*a*)	(*a*)	....	(*b*)	(*b*)	....
California	*c* 87,272,593	*c* $39,624,501	$0.454	97,788,525	$45,709,400	$0.467
Colorado	206,052	199,661	.978	188,799	174,779	.926
Illinois	28,601,308	24,332,605	.851	23,893,899	30,971,910	1.296
Indiana	970,009	885,975	.913	956,095	1,279,226	1.337
Kansas	1,592,796	1,095,698	.688	2,375,029	2,248,283	.947
Kentucky	484,368	424,842	.877	524,568	675,748	1.288
Louisiana	9,263,489	7,023,827	.758	12,498,828	12,255,931	.981
Michigan	(*d*)	(*d*)	....	(*b*)	(*b*)	....
Missouri	....	....	....	(*b*)	(*b*)	....
New Mexico	....	....	....	(*b*)	(*b*)	....
New York	874,128	1,401,880	1.604	902,211	2,169,357	2.404
Ohio	*e* 8,969,007	*e* 12,085,998	1.347	8,781,468	17,538,452	1.997
Oklahoma	51,427,071	34,672,604	.674	63,579,384	59,581,948	.937
Pennsylvania	7,837,948	12,886,752	1.644	7,963,282	19,805,452	2.487
Texas	11,735,057	8,852,718	.754	15,009,478	14,675,593	.978
West Virginia	12,128,962	19,927,721	1.643	11,567,299	28,828,814	2.492
Wyoming	1,572,306	798,470	.507	2,406,522	1,187,232	.493
Other States	....	....	....	*f* 10,843	*f* 19,263	1.777
Total	222,935,044	164,213,247	.737	248,446,230	237,121,388	.954

a Included in California.
b Included in other States.
c Includes Alaska.
d Included in Ohio.
e Includes Michigan.
f Includes Alaska, Michigan, Missouri, and New Mexico.

The rank of the three great producing States—California, Oklahoma, and Illinois—remained the same in 1913 as in 1912, and there were few changes in the States of lower rank, though the increased production in northern Texas and northern Louisiana advanced those States above West Virginia. In the less productive States, Wyoming exceeded Kansas by a small margin, and both States showed increased production.

The phenomenal increase which has characterized the growth of the petroleum industry in the United States during the last eight years, was more than maintained in 1914. The amount produced, according to the estimates of the United States Geological Survey, approximated about 292,000,000 barrels in that year. The production in 1913–14 is shown in the following table:

State	*1914*	*1913*
California	103,000,000	97,788,525
Oklahoma	98,000,000	63,579,384
Illinois	21,000,000	23,893,899
Texas	20,000,000	15,009,478
Louisiana	15,000,000	12,498,828

State	*1914*	*1913*
West Virginia	11,000,000	11,567,299
Ohio	7,500,000	8,781,468
Pennsylvania	7,000,000	7,963,282
Wyoming	4,600,000	2,406,522
Kansas	2,700,000	2,375,029
Indiana	700,000	956,095
New York	800,000	902,211
Kentucky	500,000	524,568
Colorado	150,000	188,799
Other States	50,000	10,843
	292,000,000	248,446,230

FUEL OIL. The use of oil as a fuel continued to increase in 1913. Oil as a fuel is used widely where either of two conditions prevail. First, where oil is the most efficient source of heat and power, because of the absence or inadequate supply of cheaper fuel; and second, where the use of oil as fuel represents a means of disposing of excess accumulation of crude oil, residues, or distillates, for which no market is at hand. The first condition is found chiefly on the Pacific coast and the second in the newer fields. Oil is also beginning to be used as fuel by vessels of the navy and the merchant marine. It is estimated that the quantity of crude oil used as fuel in California in 1913 was 63,000,000 barrels. The use by railroads of oil from other fields than California, and the fuel oil furnished from imported Mexican crude, brought the total quantity of fuel oil consumed in the United States in 1913, to 83,000,000 barrels.

WORLD PRODUCTION. The total world production in 1913 was 381,508,916 barrels. Countries other than the United States produced as follows: Russia, 60,935,482 barrels; Mexico, 25,696,291 barrels; Rumania, 13,554,768 barrels; Galicia, 7,818,130 barrels; India, 7,500,000 barrels; Dutch East Indies, 11,966,857 barrels; Japan, 1,942,009 barrels.

PHARMACY, SCHOOLS OF. See UNIVERSITIES AND COLLEGES.

PHELAN, JAMES DUVALL. An American public official, elected on Nov. 3, 1914, United States Senator from California. He was born in San Francisco, in 1861, and was educated at St. Ignatius College and at Santa Clara College, after which he studied law at the University of California, but did not actively practice. From his earliest manhood he took an interest in public affairs and was a member and vice-president of the World's Columbian Commission. In 1896 he was elected Mayor of San Francisco and held this position until 1902, several times receiving a complimentary vote for United States Senator in the California Legislature. Following the earthquake and fire of 1906, he was designated by President Roosevelt's proclamation to receive funds and use the United States Mint as a depository. As one of the foremost citizens of San Francisco he was active in bringing about reforms in municipal conditions following the fire. He served as a member of the park and library commissions of the city; was a member of the board of regents of the University of California, and was also an official and director in several important financial institutions. Mr. Phelan is a Democrat; was nominated at the direct primary election in 1914, and after a very close vote was elected United States Senator, although the Progressives succeeded in electing the Governor and other important State officials. See CALIFORNIA.

PHILIPPINE ISLANDS. POPULATION. No census of the Philippines has been taken since 1903, when the population was 8,265,348. An estimate by the United States Census Bureau places the population on July 1, 1914, at 8,650,937.

AGRICULTURE. The chief efforts for the development of the islands have been related to the problem of extending its agricultural possibilities. Six governmental agencies giving instruction in agriculture or engaged in agricultural development, are the Bureau of Agriculture, the Bureau of Education, the College of Agriculture, the Bureau of Forestry, the Bureau of Science, and the College of Veterinary Medicine. The Bureau of Agriculture creates agricultural knowledge through its experimental work and its field studies. The Bureau of Education teaches agriculture in its schools. The work of the other organizations are sufficiently indicated by their titles. In 1914 there was published a summary of the results of special investigations, in the development of the Philippines, made by Henry Jackson Waters, president of the Kansas State Agricultural College. He finds conditions in the main favorable to agricultural development, but emphasizes the importance of coördinating the agencies for giving instruction in agriculture, and points out the waste in the present methods especially in the sugar industry, declaring that the sugar producers cannot hope to compete successfully with those of other countries while permitting 35 per cent of the sugar contained in their cane to be lost in the process of milling. He also points out the importance of providing a suitable and ample food supply for the people of the Philippines, and declares that this would be possible if all the possibilities of development were taken advantage of.

The agricultural conditions in 1914 are indicated in the table of commerce on the following page. The rice crop was considerably smaller than in 1913, while the sugar exports were practically the same. The copra crop was much smaller in 1914 than in 1913, and exports of cigars also showed a large decrease. The leaf tobacco exports, however, showed an increase of about $2,000,000. The exports of hemp decreased from 142,292 long tons in 1913 to 130,774 tons in 1914.

COMMERCE. Customs returns of the Philippine Islands for the year ending June, 1914, show a satisfactory condition in the import trade, but a reduced value in exports, as compared with the year ending June, 1913. Imports amounted to $56,011,570, and, though slightly below those of the previous year, there was a substantial increase in the general import trade of the islands, the smaller total being due to greatly reduced foreign purchases of rice following larger local production. Exports were valued at $51,238,048, and were about two and a half million less than the exceptionally large value reached in 1913.

There was a marked increase in imports of iron and steel, among which sugar machinery took a prominent place, while larger values of structural iron and steel, rails for railways, corrugated roofing and cement also testified to growing activity in the development of the islands. The $8,000,000 trade in cotton cloths was increasing with the United States, American textiles representing about 75 per cent. A larger value in cotton yarns and knit goods than heretofore recorded was characterized by the distinct lead credited to Japanese products.

The reduced export total reflected the continuing effect of the drought and typhoons of 1912 on the production of copra and Manila hemp, and a reduced American demand for the Philippine cigar.

The quantity of hemp exported was the smallest since 1908, but the monopoly of the Philippines in the production of this fibre has in the past two years furnished full compensation for declining output in advancing prices, and the reduced exports of 1913 and 1914 yielded the largest values during American occupation.

Copra did not fare so well, and, though prices have been generally upward with diminishing production, the export shrinkage from the maximum of 166,667 long tons in 1912 to 70,392 in 1914 resulted in a value of only half the $16,000,000 total of that year. Estimates and the latest returns, however, point to the recovery of the hemp and coconut plantations from the disasters of two years ago.

Exports of sugar amounted to 209,606 long tons, and, slightly exceeding the previous high record of 1913, were the largest since the Spanish period. There was a resumption of activity in shipments to the United States in the closing months, after a period of reduced purchases which had forced the bulk of exports into the oriental market of former years prior to free trade.

The American demand for the Philippine cigar suffered its second serious reaction during 1914, and, though it was not so serious as that of 1911 following the first rush of free trade, exports to the United States were only about half the maximum quantity reached in 1913. The decline in the value of the cigar trade was consequently serious in spite of well-maintained shipments to other countries. Exports of leaf tobacco, on the other hand, were the largest recorded during American occupation.

Among minor exports coconut oil took the lead with a $2,000,000 value. This is a practically new export, the product of a factory recently installed at Manila, and is a factor to be considered in the reduced copra exports.

Trade with the United States continued to increase and constituted over half of all imports and 43 per cent of all exports.

The following table shows trade conditions in the fiscal years 1913 and 1914.

Transportation. During the year the Manila Railroad Company actively extended its lines in Luzon, and communication will soon be established between the most important points of the islands. The Philippine Railroad Company completed its construction work in the islands during the year. The year 1914 was on the whole the most successful year in the history of these two railroads.

Immigration and Emigration. The total arrivals in the islands in 1914 numbered 17,556, compared with 18,365 in 1913. The departures numbered 19,180, compared with 21,436 in 1913. The total number of immigrants was 4049 and the emigrants 1782.

Postal Savings Bank. The number of offices on Dec. 31, 1913, were 437; number of accounts 42,271; net deposits Dec. 31, 1913, ₱2,822,132.77; number of depositors 42,271, of whom 35,162 were Filipinos, or 83.18 per cent of total.

The number of accounts standing open on June 30, 1914, 45,518; net deposits, 2,833,824.82; number of offices 436.

Education. There were in 1914 36 school divisions, with 257 supervising districts, 3924 primary schools, 278 intermediate schools, and 44 secondary schools, making a total of 4246 schools, against 2934 in 1913, an increase of 1312. The total enrollment was 618,478, the average monthly enrollment 501,379, and the average daily attendance 436,857. There were 18 trade schools, 24 provincial shops (intermediate), 121 municipal shops (intermediate), and 215 municipal shops (primary).

The total number of American teachers was 609; total number of Insular Filipino teachers, 1236; total number of municipal teachers, 7559; total number of aspirantes, 72.

The Philippine Normal School building, Manila, was completed at a cost of ₱436,000. Nearly 1000 prospective teachers are annually receiving instruction here along the lines of advanced academic work, basketry, hat-making, fine needlework, lace-making, and domestic science and economy.

The Philippine School of Arts and Trades, Manila, is the largest trade school in the Philippine Islands, and annually sends out a number of skilled and experienced workmen. Instruction is given in automobile repairing, carpentry, wheel-wrighting, furniture-making, ceramics, blacksmithing, designing, and molding. Practical shop work naturally receives

		Year ending June	
		1913	*1914*
Rice production	Kilos	625,000,000	500,000,000
Rice imports		$7,940,857	$2,800,884
Sugar exports	Kilos	212,540,468	212,970,607
Sugar exports		$9,491,540	$9,457,982
Copra exports	Long tons	111,269	70,392
Copra exports		$11,647,898	$8,297,429
Cigar exports	Number	207,896,000	164,065,000
Cigar exports		$3,356,748	$2,523,540
Leaf tobacco exports	Pounds	29,060,665	31,605,503
Leaf tobacco exports		$2,005,667	$2,018,294
Total tobacco exports		$5,454,056	$4,671,700
Manila hemp exports	Long tons	142,292	130,774
Manila hemp exports		$23,044,744	$22,375,106
Total imports		$56,327,583	$56,011,570
Total exports		$53,683,326	$51,238,048
Total foreign commerce		$110,010,909	$107,249,618
Imports from United States		$25,387,085	$28,571,821
Exports to United States		$19,848,885	$22,047,105
Total commerce with United States		$45,235,970	$50,618,926
United States percentage of total foreign commerce		41	47

most emphasis, yet regular academic work through intermediate grades is also given.

The Philippine School of Commerce offers a four-years course in business and clerical subjects. The requirement for admission is completion of the intermediate course. Stenography, typewriting, bookkeeping, commercial arithmetic and geography, and business correspondence are thoroughly taught. The Philippine School for the Deaf and Blind, Manila, provides for an education for children too deaf and blind to be properly instructed in the common public schools. Courses in the regular academic subjects, lip reading and finger speech, as well as certain industrial subjects, are taught. The School of Household Industries, Manila, is to train adult women in certain selected home industries. Instruction is given in fancy needlework, embroidery, and lace-making. The complete course requires six months, classes being graduated semiannually. Upon returning to their home towns, graduates establish working centres for the production of high-grade needlework.

The Central Luzon Agricultural School has dormitory accommodations for the pupils and operates a large farm.

The expenditures for school purposes amounted to ₱3,868,400.96.

FINANCE. The latest available statements for the complete fiscal year are for 1913. The balance at the beginning of the year amounted to $8,239,312, the total revenues to $13,489,700, and the total expenditures to $14,745,201. The bonded indebtedness of the Philippine government in 1914 was $16,125,000.

POLITICS AND GOVERNMENT. In October a bill for the government of the islands was passed in the United States House of Representatives by a vote of 211 to 59. The bill virtually promises independence to the islands "as soon as a stable government shall have been established." The measure provides for an elective Senate, thus making both branches of the Legislature elective, gives a qualified veto power to the Governor-General, and an absolute veto power to the President. The bill was not taken up in the Senate during the Sixty-third Congress.

In 1913 upon the recommendation of the Governor-General and the Commanding General in the Philippine Islands, and with the approval of the Secretary of War, it was decided to take another step in the development of the civil government in the Moro Province by making the Governor a civil officer. The first appointment to this important office was Mr. F. W. Carpenter, well known for many years for his able administration of the office of Executive Secretary in Manila. By Act No. 2309, passed Dec. 20, 1913, the name of Moro Province was changed to the Department of Mindanao and Sulu, and the Province of Agusan was placed under the jurisdiction and control of the Governor of said Department. On July 23, 1914, the Philippine Commission passed a new Organic Act (Act. No. 2408) for the government of the Department of Mindanao and Sulu, as it is now called. The act retains the Legislative Council of five, appointed by the Governor-General, but elevates the districts to the dignity of provinces governed by a Governor and Secretary appointed by the Department Governor, and a third member who is elected. Municipal governments modified to suit the varying degrees of advancement of their inhabitants are to be organized, consisting of a president appointed by the Provincial Governor, an elected vice-president, and a councilor for each barrio.

HISTORY. Disturbances on the part of malcontents in the latter part of December were frustrated by the prompt action of the police and constabulary. For some time previous officers of the army had been warned that several thousand Filipinos living in or near Manila were preparing for a revolutionary attack upon the authorities. News of the plot came from members of the constabulary who had joined secret societies whose members were followers of Artemio Ricarte, a fugitive revolutionist living in Hongkong. As a result of this knowledge careful preparations were made, especially in the strongly fortified island of Corregidor, in which garrison two companies of scouts were disarmed. American residents in isolated places were supplied with rifles and ammunition. The threatened attack was begun on December 24, when followers of Ricarte fired upon the Manila police in the Botanical Gardens, but these insurgents were soon subdued and placed in prison. At Navotas, six miles north of Manila, an unsuccessful attack was made upon the municipal buildings and guards, and here 25 prisoners were taken. It was indicated by press reports that documents had been found which proved the existence of a widespread conspiracy, and that 30,000 Filipinos had for some time been drilling in anticipation of an uprising.

LEGISLATION. The Third Philippine Legislature held its second session from Oct. 16, 1913, to Feb. 3, 1914, and a special session from Feb. 6, 1914, to Feb. 28, 1914. Among the many acts passed the following are some of the more important:

An act creating five additional companies of constabulary; an act authorizing the Governor to sell or lease the buildings and other property known as the Insular Cold-storage and Ice Plant; an act creating a board of public utility commissioners and prescribing its duties and powers; an act changing the name of the Moro Province to the Department of Mindanao and Sulu, placing the Province of Agusan under the jurisdiction and control of the Governor of said province; an act abolishing the office of supervising railway expert, and transferring the duties of said office to the board of public utility commissioners; an act revising and consolidating the laws relative to internal revenue; an act providing for the reorganization of the courts of First Instance and of the Court of Land Registration; an act providing for the taking of a census of the Philippine Islands; an act providing for the sale of the land known as the San Lazaro Estate, in the city of Manila; an act providing for the inspection, grading, and baling of Abaca (Manila hemp), maguey, sisal, and other fibres.

In its final session a reply was made to statements published in the public press by Dean C. Worcester, former Secretary of the Interior for the Islands, as to slavery or peonage. The reply asserted that investigation had shown that slavery, in the legal sense of the word, did not exist in the archipelago. The Assembly granted to the Marconi Company a franchise for the erection of 40 wireless stations, with a provision authorizing the Philippine government to take over the system in time of war. Governor-General Harrison, in a message to Secretary Garrison, said that harmony in the local government was indicated by the passage of a general appropriation bill, by which more than $1,000,000 of annual expenditure would be saved without any impairment of efficiency. To the Bureaus of Health and Education were given substantially the amounts recommended by their directors. Mr. Harrison in his message stated that the receipts of the bureaus hereafter would revert automatically to the general treasury, instead of allowing chiefs to spend such sums in their discretion for purposes not specifically authorized. The salaries were reduced, but this was confined entirely to higher officials. No salaries of $3000 or under were cut. Salaries between $3000 and $5000 were cut 5 per cent; salaries of over $5000 were cut 10 per cent. The bill providing for these decreases passed both Houses unanimously. In the Upper House of the Legislature, formerly controlled by Americans, was in 1914 a majority of natives.

OFFICERS. The Philippine Commission in 1914 was composed of the following members: Governor-General and President of the Commission, Francis Burton Harrison; Vice-Governor and Secretary of Public Instruction, Henderson S. Martin; Secretary of Finance and Justice, Victorino Mapa; Secretary of Commerce and Police, Clinton L. Riggs; Secretary of the Interior, Winfred T. Denison. Members: Rafael Palma, Vicente Singson, Jaime C. de Veyra, Vicente Ilustre.

The vacancy of Associate Justice of the Supreme Court, created by the appointment of Victorino Mapa as a member of the Philippine Commission, was filled by the appointment of Manuel Araullo, who was at that time president of the code committee. See HYGIENE; VITAL STATISTICS.

PHILOLOGY, CLASSICAL. The *Loeb Classical Library* (see YEAR BOOK for 1911, 1912, 1913) was enlarged by translations of Cicero, *De Officiis* and *De Finibus;* Dio Cassius (two of the promised nine volumes); Horace, *Odes and Epodes;* Julian, volume ii; Plato, (one volume); Suetonius (complete in two volumes); Tacitus, *Dialogus, Agricola,* and *Germania;* and Xenophon, *Cyropædia.* A fine translation of the *De Architectura* of Vitruvius, the Roman engineer, by the late Professor M. H. Morgan, of Harvard University, appeared. To the *Oxford Library of Translations* were added volume ix of the important translation of Aristotle, covering the *Eudemian Ethics* and the *De Virtutibus et Vitiis,* and a version of Aristotle's *Magna Moralia.*

Of the articles in periodicals, extremely varied in scope, and for the most part highly technical or devoted to matters not of wide general interest, only a very few can be mentioned. However, to indicate the tendencies of American classical scholarship, the articles which appeared in the leading American classical periodicals may be noted in some detail. In *The American Journal of Philology,* edited by B. L. Gildersleeve, were published "Notes on Plautus and Terence," C. Knapp; "Some Greek, Roman, and English Tityretus," W. B. McDaniel (a discussion of the semi-respectable street roisterer, and a suggestion that the name "Tityretu," given to modern roisterers, was derived from *tityrus,* a satyr: there is no direct connection between the term and the words *Tityre tu,* with which Vergil's *Eclogues* begin); "A Rejected Poem and a Substitute," T. Frank (a suggestion that Catullus meant to suppress 68 A, and to keep 68 B. He failed, however, to destroy the former poem; his posthumous editor, finding it among Catullus's papers, published it, as prefix to 68 B); "The Archetype of our Iliad and the Papyri," G. M. Bolling; "Varroniana," E. W. Fay; "The Participle in Livy," R. B. Steele; "Studies in the Syntax of Early Latin," C. Knapp (a summary and criticism of part of Bennett, *The Syntax of Early Latin,* vol. ii—*The Cases*); "The Duration of the Trojan War," B. O. Foster; "Two Homeric Personages," J. A. Scott; "Cæsar, Cicero, and Ferrero, I," E. G. Sihler; "Spanish Inscriptions," H. Martin; "Aristarchas of Samos," W. A. Heidel. Two reviews in this Journal, by K. F. Smith, deserve attention. One deals with Magnus's monumental text-edition of the *Metamorphoses* of Ovid, the other with Schevill's *Ovid and the Renaissance in Spain* (the latter work traced the influence of Ovid in Spain, with special reference to the development of types of narrative literature in the modern world). Norden's *Agnostos Theos,* noticed last year, was discussed in *The American Journal of Philology,* by R. H. Tukey and B. L. Gildersleeve.

From *Classical Philology,* edited by P. Shorey, may be noted "Dramatic 'Satura,'" B. L. Ullman; "The Formation of the Chalcidic League," A. B. West; "The 'Continuation' of the Odyssey," A. Shewan; "Representative Government in the Macedonian Republics," T. Frank; "Studies in the Exclamatory Infinitive," A. R. Anderson; "The Form of the Early Etruscan and Roman House," Margaret C. Waites; "Documentary Frauds in Litigation at Athens," G. M. Calhoun; "Greek and Latin Etymologies," F. A. Wood; "A New Fragment of the Decree of Chremonides," K. K. Smith; "The Unity of the Enclitic 'Ne,'" A. R. Anderson; "Gens, Familia, Stirps," M. Radin; "Attic Archons from 294 to 262 B. C.," A. C. Johnson; "The Historical Infinitive," J. J. Schlicher; "Apprentice Contracts and the Apprentice System in Ancient <=Roman> Egypt," W. L. Westermann; "Plato's *Laws* and the Unity of Plato's Thought. I," P. Shorey; "Athenian Interpolations in Homer. Part II. External Evidence," J. A. Scott; "Notes on Attic Inscriptions," A. C. Johnson.

In Volume 44 of *The Transactions of the American Philological Association* we find the following papers, among others: "The Conclusion of Cicero's *De Natura Deorum,*" A. S. Pease; "Repudiative Questions in Greek and Latin," A. R. Anderson; "A Study of the Social Position of the Devotees of the Oriental Cults in the Western World, Based on the Inscriptions," D. N. Robinson; "The Story of the Strix: Ancient," S. G. Oliphant (a study of ancient tales of the woman-bat); "The Genitive and Dative Singular of the Latin Pronominal Declension," E. H. Sturtevant; "The Site of Dramatic Performances at Rome in the Times of Plautus and Terence," Catharine Saunders; "The Plot of the *Querolus* and the Folk-Tales of Disguised Treasure," D. P. Lockwood.

Though *The Classical Journal* and *The Classical Weekly* are devoted primarily to the pedagogical side of Latin and Greek studies rather than to research, some articles from them may be mentioned here. In *The Classical Journal* appeared "The Presentation of Classical Plays," D. D. Haines (an interesting discussion of performances in modern times of ancient plays), and "The Old and the New in Metrics," R. W. Husband (a useful statement of the positions taken by divergent schools with respect to Greek and Roman metrics). The newer school is represented by J. W. White's *The Verse of Greek Comedy,* noticed in the Year Book for 1912. For discussions of Professor White's book see *Classical Philology,* viii, 99–104, 214–220. From *The Classical Weekly* we may note, besides many excellent reviews, "Roman Comedy," W. A. Oldfather, and "The Abuse of Fire," W. B. McDaniel (a study of fire "miracles" in ancient religion and magic).

Under the auspices of various universities—California, Columbia, Cornell, Harvard, Leland Stanford, Michigan, Nevada, Wisconsin, Yale—are published studies in classical philology. From *Harvard Studies* for 1913 we may name "The Latin Epyllion," C. N. Jackson; "Lucilius: The Ars Poetica of Horace and Persius," G. C. Fiske; and "Cicero's Judgment on Lucretius," H. W. Litchfield, a discussion of the famous passage, *Ad Quintum Fratrem* 2.9 (11), in which Cicero pronounced judgment on the poetry of Lucretius. In *Harvard Studies* for 1914 (vol. xxv) appeared "National Exempla Virtutis in Roman Literature," H. N. Litchfield; "Mediæval Versions of the Posterior Analytics," C. H. Haskins; "Molle Atque Facetum," C. N. Jackson (a discussion of the well known passage, Horace *Sermones* 1.10.44); "Hippocratea," W. A. Heidel (a very elaborate discussion of the text in many passages of Hippocrates). The Leland Stanford University press issued *The Birds of the Latin Poets,* E. W. Martin. In the *University of California Publications in Classical Philology* appeared "Ovid and the Renaissance in Spain," R. Schevill (see the second paragraph of this article). The important *Humanistic Series* of the University of Michigan was made even more valuable by the publication of "Athenian White Lekythoi, With Outline Drawing in Matt Color on a Dark Ground," A. Fairbanks, and "East Christian Paintings in the Freer Collection," C. R. Morey, two sumptuous and richly illustrated volumes. "De Rinucio Aretino Græcarum Litterarum Interprete," D. P. Lockwood in *Harvard Studies,* for 1913, deals with a writer of the humanistic period. Here may be named an edition of *The Piscatory Eclogues of Jacopo Sannazaro,* by W. P. Mustard, who in 1911 edited the *Eclogues* of Baptista Mantuanus. The Yale University press published E. G. Sihler's *Cicero of Arpinum,* an elaborate biographical study of Cicero.

Some works which aim to give control of publications in the field of classical philology may be named: *The Year's Work in Classical Studies* (vol. viii, covering 1913, appeared in 1914); *Bursian's Jahresbericht,* in its forty-second year (in each year there are elaborate articles which enumerate and appraise the contributions within a given period, sometimes many years in length, to a given field of classical study); *Bibliotheca Philologica Classica,* a quarterly supplement to the *Berliner Philologische Wochenschrift* (the *Wochenschrift* itself consists mainly of reviews of books and articles on classical subjects, in part, however, of summaries of other classical periodicals). Very useful is *Bibliographie Pratique de la Littérature Grecque,* P. Masqueray, published in 1914. Helpful also are the summaries of the contents of various classical periodicals which are given in each number of *The Classical Quarterly.*

Of "Greek Inscriptions from Sardes," by W. H. Buckler and D. M. Robinson, noted in the Year Book for 1912 and 1913, installments IV and V appeared in *The American Journal of Archæology.* The latter deals with a very elaborate record, on a large stone, which relates, among other things, to a certain Menogenes, who, among various claims to honor, served as a member of a committee sent by Sardes to Rome to congratulate Augustus on the coming of age of his son, Gaius Julius Cæsar, and to "discourse with Augustus concerning the common interests of Asia and of the City." Sections A and B of Divisions II and III of the *Publications of the Princeton University Archæological Expeditions to Syria in 1904–5 and 1909* were issued; these dealt with "Ancient Architecture in Syria," and "Greek and Latin Inscriptions in Syria." W. Larfeld's authoritative work, *Griechische Epigraphik,* the best in its field, reached a third edition. R. Cagnat's *Cours d'Epigraphie Latine,* the best available general treatment of Latin epigraphy, reached its fourth edition. H. Dessau's *Inscriptiones Latinæ Selectæ* was enlarged by the publication of vol. III, part I, containing "Nachträge" and "Indices." New parts appeared also of *Inscriptiones Græcæ ad Res Romanas Pertinentes,* and of *Sammlung der Griechischen Dialekt-Inschriften.* Other important books in this field are *Das Rheinische Germanien in den Antiken Inschriften,* A. Riese; *Die Römischen Inschriftsteine der Hofbibliothek Wien,* E. Groag; *Mélanges d'Archéologie et d'Epigraphie Byzantines,* O. Jarafli. A serviceable collection of inscriptions for use in schools is *Inscriptiones Græcæ,* O. Kern, volume 7 of the *Tabulæ in Usum Scholarum,* published at Bonn. An important publication of 1913, not noticed last year, was the beginning of Kirchner's revision of part of *Inscriptiones Græcæ:* for the light thrown by the documents there given on Athenian state-history see K. K. Smith in *The Classical Weekly* 8.50–55.

In paleography, the most important work of the year is *The Beneventan Script: A History of the South Italian Minuscule,* E. A. Loew; in a review in *The American Journal of Philology* 35.340–343, C. U. Clark describes this book as "the most important recent paleographic investigation in any language." Volume x of the invaluable *Oxyrhynchus Papyri,* by Messrs. Grenfell and Hunt, was issued. For an account of the contributions to our knowledge of Greek literature through these and other papyri finds see "New Greek Literature," C. W. Peppler, in *The South Atlantic Quarterly* for April, 1914. Important also are *Exempla Codicum Litteris Minusculis Scriptorum Annorumque Notis Instructorum: Volumen Alterum, Codices Petropolitani,* edited by G. Ceretelli and S. Sobolevski, published in 1913; "Papiri Greci e Latini, II," in *Pubblicazioni della Società Italiana per la Ricerca dei Papiri Greci e Latini; Veröffentlichungen aus der Papyrus-Sammlung der K. Hof- und Staatsbibliothek zu München, I: Byzantinische Papyri,* edited by A. Heisenberg and L. Wenger; *Papyri Iandanæ: Fasciculus IV,* edited by G. Speiss, containing "Instrumenta Græca Publica et Privata"; *Herculanensium Voluminum quæ supersunt Collectio Tertia. Tomus I* (containing Greek works, by Philodemus). Interesting is an inaugural lecture by A. C. Clark, *Recent Developments in Textual Criticism.*

Dr. E. Zeller's *Grundriss der Geschichte der Griechischen Philosophie* reached its eleventh edition, at the hands of F. Lortzing. The ninth edition of Ritter and Preller's valuable *Historia Philosophiæ Græcæ* appeared in 1913. J. Burnet published *Greek Philosophy. Part I: Thales to Plato.* A. W. Benn's *The Greek Philosophers* reached a second edition. In the kindred field of religion we may notice, first, that the revised edition of Frazer's monumental work, *The Golden Bough,* was completed. The revised portions published during the year include "Balder the Beautiful" and "Adonis, Attis, and Osiris." Other important works are *Zeus: A Study in Ancient Religion,* vol. i; *Zeus, God of the Bright Sky,* A. W. Cook (with 42 plates, 566 figures); *Roman Ideas of Deity in the last Century Before the Christian Era,* W. W. Fowler; *Les Mystères d'Eleusis,* P. Foucart; "Principii di Religione Dionisiaca," C. Lanzani, in the Italian *Athenæum* (an effort to show that Dionysus was "in later times a solar god in his earthly manifestations . . . paralleled by Apollo as the solar deity of the heavens, and by Orpheus the sun-god as man"). Much important work in the field of philosophy and religion appears in the periodicals, especially in the *Archiv für Religionswissenschaft.* One article by O. Waser, entitled "Ueber die äussere Erscheinung der Seele in den Vorstellungen der Völker, zumal der alten Griechen," dealt with the forms under which the soul was represented, such as birds, the bat, the bee, the fly, the serpent, and the butterfly. An important article, copiously illustrated, giving ingenious and often convincing explanations of magic formulæ, by A. Delatte, in the *Musée Belge,* dealt with studies in Greek magic.

In the *Revue des Etudes Grecques* F. Greif wrote elaborately on ancient music, criticising the views of Hermann, Rosbach, and Westphal. For the "new metric" as applied to Greek and Latin, see the fifth paragraph of this article. Parts II and III of C. Zander's *Eurythmia, vel Compositio Rythmica Prosæ Antiquæ* appeared: Part II deals with the "Eurythmia Ciceroni." In a review of the first part of this work, in *Classical Philology,* vi. 494–497, P. Shorey, a competent critic, urged caution in accepting the views of Zander. Th. Zielinski, the well-known pioneer in the renewed modern study of rhythm in ancient prose, gave further evidence of researches in this field by his *Der Constructive Rhythmus in Ciceros Reden.*

In the field of Greek and Latin grammar and linguistics we note first that the revised (second) edition of Kühner's *Ausführliche Grammatik der Lateinischen Sprache* (see YEAR BOOK for 1912) was completed by the publication of part II of vol. ii. Prof. C. E. Bennett issued the second volume of his great work, *The Syntax of Early Latin* (see YEAR BOOK for 1910 and 1911): this volume deals with the cases (see the second paragraph of this article). An important periodical in this field is *Glotta;* in the fourth part of this, for 1913, in the section on syntax, there was a report, covering 40 pages, on the extraordinary amount of work recently done in Latin syntax. Part IV of vol. v of this periodical, for 1914, contains a very valuable report of the linguistic work, including articles, of 1911. In *Glotta* again, in 1914 (vol. vi), appeared a long article, by R. Methner, on the development of the qualitative ablative in Latin. Reference may be made also to "The Grammatical Chapters in Quintilian 1.4–8," F. H. Colson, in *The Classical Quarterly; De l'Aspect Verbal en Latin Ancient,* D. Barbalent; *The Semantic Variability and Semantic Equivalents of -oso and -lento,* E. W. Nichols (a Yale University dissertation); *The Dative of Agency: A Chapter of Indo-European Syntax,* A. Green (a Columbia University dissertation, 1913); and *Vom Mittelalter und von der Lateinischen Philologie des Mittelalters,* P. Lehmann. On the Greek side we have a new and enlarged edition of a valuable work, Hirt's *Handbuch der griechischen Laut- und Formenlehre;* an elaborate article on "Der Ursprung des griechischen Bereichsakkusativs," that is, on the origin of the accusative of specification in Greek, by R. Blümel, in *Indogermanische Forschungen.* Professor A. T. Robertson published *A Grammar of the Greek New Testament in the Light of Historical Research,* an elaborate work. In *The Classical Quarterly* A. Thumb, author of a very valuable work, *Handbook of the Greek Vernacular* (see the YEAR BOOK for 1913), published "On the Value of Modern Greek for the Study of Ancient Greek."

Early in the summer, before the European War began, it was announced that for various reasons the publication of *Epitome Thesauri Latini* (noticed in the YEAR BOOK for 1912) had been discontinued. The revised edition of Forcellini's *Lexicon Totius Latinitatis* made progress in 1914, as in 1913. In an interesting paper in *The Classical Weekly,* 5.34–36 (1911), Prof. C. E. Bennett showed conclusively that this lexicon was prepared by Forcellini, not, as current accounts had declared, by Facciolati. Volume ii of the "Onomasticon" of the great *Thesaurus Linguæ Latinæ,* dealing with Latin proper names that begin with C, was published. Part VII of G. Lodge's *Lexicon Plautinum,* covering *Fabula* to *Hercle,* appeared; pp. 1–672 have now been completed. From the Harvard University Press issued the third edition of E. A. Sophocle's *Greek Lexicon of the Roman and Byzantine Periods* (from B.C. 146 to A.D. 1100). Part III of Passow's *Wörterbuch der Griechischen Sprache* appeared (see the YEAR BOOK for 1913). Lübker's *Reallexikon des Klassischen Altertums* reached its eighth edition.

In the fields of Greek and Roman history and life we have an elaborate work by T. Frank, *Roman Imperialism,* whose aim is "to analyze, so far as the fragmentary sources permit, the precise influences that urged the Roman republic toward territorial expansion"; translations of two works by G. Ferrero, *Ancient Rome and Modern America* and *Between the Old World and the New: A Moral and Philosophical Contrast; Histoire de l'antiquité. Tome III. La Macédoine, Carthage et Rome (330–107),* E. Cavaignac; *Histoire de la Gaule. Tome IV: Le Gouvernement de Rome,* Jullian; *Histoire Ancienne de l'Afrique du Nord, I,* St. Gsell; *Spain under the Roman Empire,* E. S. Bouchier. For a review of books on Græco-Roman Egypt, see *The Classical Review,* 28.198–201. A pretentious work is A. E. P. Weigall's *The Life and Times of Cleopatra:* for a severe review of it, however, see *The Nation* (New York) for October 29. Pöhlmann's *Griechische Geschichte* *und Quellenkunde* reached its fifth edition. Artur Ledl, in *Studien zur älteren Athenischen Verfassungsgeschichte*, discussed questions relating to constitutional government at Athens: for a summary and criticism of the book by A. T. Olmstead, see *The Classical Weekly*, 8.78–80. An interesting book is A. W. Pickard-Cambridge's *Demosthenes and the Last Days of Greek Freedom*. The student of the Ægean or Minoan civilization may consult R. Dussaud, *Les Civilisations Préhellénique dans le Bassin de la Mer Egée*, second edition, entirely revised, and H. R. Hall, *Ægean Archæology*. Note also *The Auxilia of the Roman Imperial Army*, G. L. Cheeseman. *Roman Provincial Administration*, by W. T. Arnold, reached a third edition, by E. S. Bouchier. In the United States much activity has been shown in the publication of source-books of Greek and Roman history. Prior to 1914 such books had been issued by G. W. Botsford and H. Webster. In 1914 appeared W. S. Davis's *Readings in Ancient History: Greece* and *Readings in Ancient History: Rome;* and Ida C. Thallon's *Readings in Greek History: From Homer to the Battle of Chæronea.*

Works on kindred themes are: B. Laum, *Stiftungen in der Griechischen und Römischen Antike: Ein Beitrag zur Antiken Kulturgeschichte*, in two volumes, of which the first gives the facts, the other discusses the sources; E. Ziebarth, *Aus dem Griechischen Schulwesen;* J. Kromayer, "Die Wirtschaftliche Entwicklung Italiens im 2. Jahrhundert vor Chr.," in *Neue Jahrbücher für das klassische Altertum*, an elaborate and illuminating study of the social, economic, and imperial conditions which fostered the *latifundia*, or huge landed estates, and of the efforts made to check the development of such estates. Books at once popular and authoritative are *Days in Attica*, Mrs. R. C. Bosanquet, and *Ancient Greece*, H. B. Cotterill, a sketch of the art, literature, and philosophy of Greece, viewed in connection with its external development, from the earliest times to the age of Alexander the Great.

Some works dealing with the science of the ancients deserve mention: W. Capelle, "Die Nilschwelle," in *Neue Jahrbücher für das klassische Altertum*, a learned article setting forth ancient observation and theory about the rising of the Nile, examined in the light of modern knowledge; Th. Kopfner, *Der Tierkult der alter Ægypter;* O. Keller, *Die Antike Tierwelt*, vol. ii, dealing with birds, reptiles, fishes, insects, etc.; R. Wolfgang, *Das Nachrichtenwesen des Alterthums mit besonderer Rücksicht auf die Römer;* H. Diels, "Wissenschaft und Technik bei den Hellenen," in *Neue Jahrbücher für das klassiche Altertum*, a discussion of applications of science to art and affairs, from Thales to Archimedes; M. Besneer, *Lexique de Géographie Ancienne;* E. E. Sikes, *The Anthropology of the Greeks.*

Works dealing with Roman law are: *History of Roman Private Law: Part II*, E. C. Clark, an account of Roman jurisprudence; and *Etudes d'Histoire Juridique offertes à P. Fr. Girard par ses élèves*, in two volumes.

In the field of Greek and Roman literature we may notice that the first half of vol. iv of M. Schanz's *Geschichte der Römischen Litteratur* reached its fourth edition: this deals with Latin literature from Constantine to the time of the Codex Justinianus. Friedrich Leo, whose untimely death in January, 1914, robbed classical scholarship of the conclusion of his great *Geschichte der Römischen Litteratur* (see YEAR BOOK for 1913), published in *Hermes* an article, "Die Römische Poesie in der Sullanischen Zeit," which was to be a chapter of vol. ii of his great work. Valuable is "Kritik und Hermeneutik," Th. Birt, part of the much-needed revision, now under way, of vol. i of Müller's *Handbuch der Klassischen Altertumswissenschaft.* Special works worthy of mention are: "Nerone Poeta e i Poeti intorno a Nerone," C. Morelli, in the Italian *Athenæum*, a study of the literary circle that gathered about Nero, with special reference to Seneca as its dominant figure and inspirer of the other members; *The Origin of Attic Comedy*, F. M. Cornford; "Die Ionische Novellistik," A. Hausrath, in *Neue Jahrbücher für das klassische Altertum*, a study of the development of the shorter forms of ancient prose fiction, from the logographers who preceded Herodotus to Petronius and Apuleius. E. Rohde's *Der Griechische Roman und Seine Vorläufer* reached its third edition. Several collections of the shorter, scattered writings of deceased classical scholars were published or extended: Th. Mommsen, *Gesammelte Schriften*, vol. viii, dealing with epigraphical and numismatical themes; H. Usener, *Kleine Schriften*, vol. iii; W. Skutsch, *Kleine Schriften.*

An important event was the publication, in the Oxford Classical Text Series, of Part I of a new critical text-edition of Livy: this covers books i–v. Other important texts are in *Corpus Agrimensorum Romanorum*, vol. i, part I (see *The Classical Review*, 28.108–109). A *Corpus Medicorum Græcorum*, in 12 volumes, has been planned, to be published by B. G. Teubner, in Leipzig: part of vol. v, dealing with Galen, appeared in 1914.

Of works on special authors there is space to mention only R. T. Elliott, edition of the *Acharnians* of Aristophanes; L. Cooper, *Aristotle and the Art of Poetry*, a new and useful translation; T. R. Holmes, edition of Cæsar, *De Bello Gallico;* E. G. Sihler, *Cicero of Arpinum* (see the sixth paragraph of this article); E. Bethe, *Homer, Dichtung und Sage: Erster Band;* A. Roemer, *Homerische Aufsätze*, reviewed, together with other Homeric books, by A. Shewan, in *The Classical Review*, 28.128–132; G. Finster, *Homer: Der Dichter unde seine Welt*, second edition; K. Rothe, *Die Odyssee als Dichtung und ihr Verhältniss zur Ilias*, reviewed by J. A. Scott in *The Classical Weekly*, 8.62–64; J. K. Thompson, *Studies in the Odyssey;* Magnus, elaborate text-edition of the *Metamorphoses* of Ovid (see the second paragraph of this article); A. Gudeman, editio maior of the *Dialogus* of Tacitus, in the second, German edition; W. R. M. Lamb, *Clio Enthroned. A Study of Prose-Form in Thucydides;* A. Boucher, a valuable French edition of the *Anabasis* of Xenophon; T. F. Royds, *The Beasts, Birds, and Bees of Virgil;* W. G. D. Butcher, "The Cæsura in Virgil and its Bearing on the Authenticity of the Pseudo-Virgiliana," in *The Classical Quarterly*, 8.123–131; P. Rasi, *Bibliografia Virgiliana*, for 1910–1911. Mr. Butcher holds that his study makes it probable that the *Culex* and the *Moretum* are genuine pieces of Vergil, but that the other poems commonly included in the Pseudo-Vergiliana were not written by Vergil. This is an interesting contribution to the discussion of the authenticity of these pieces noted in the last YEAR BOOK (last paragraph).

PHILOLOGY, MODERN. The study of philology is at present undergoing a process of transformation which will probably mark a new and important era in its development. The self-styled "Back to Nature" school, founded some 30 years ago by the Germans under the leadership of Schuchardt, believed they could arrive at general laws, applicable to all possible cases, by means of studies of dialects. Their preferred method, *Sprachmischung*, or the mutual penetration of two dialects, has been found wanting, because of the numerous historical factors and variable accessory circumstances which had to be taken into consideration. The new French school, with the brilliant Meillet at its head, rejects entirely the esoteric philology which isolates linguistic facts from all contact with life, and attempts to interpret linguistics by the social movements of civilization—in a word, to recognize in the development of languages the result of political and social actions. Such a doctrine necessarily implies the subordination of theory to fact and the restoration of the written language to its former place of supremacy. It will be interesting to note the development of the new doctrines, though, in view of the present conditions, no vital change can be expected for several years to come.

If the above is true concerning the study of philology, in regard to grammar on the contrary a reaction is noticeable against the study of the history of languages in favor of the general principles of the theory of language. Jespersen's *Modern English Grammar On Historical Principles* (part ii, syntax, vol. i, Heidelberg) * represents to a certain extent an effort to revive the teaching of grammar which has only slightly shown the effects of the progress of linguistics during the course of the century just passed.

Among the works of a more or less general character which have recently appeared, the following deserve to be noted: Bloomfield, *Introduction to the Study of Language* (New York); Flagstad, *Psychologie der Sprachpädagogik* (Leipzig, 1913); Blümel, *Einführung in die Syntax* (Heidelberg); a new edition of Bréal's well-known *Essai de Sémantique* (Paris, 1913), which laid the foundations of the new science of semasiology; Pinloche, *La nouvelle pédagogie des langues vivantes*, and Bossert, *L'enseignement des langues vivantes* (Paris), both of considerable interest to teachers; Bradley's *On the Relations Between Spoken and Written Language With Special Reference to English* (Oxford), which is, in spite of its title, of equal importance to the study of language in general; Wyplel, *Wircklichkeit und Sprache* (Vienna), having as its subtitle *eine neue Art der Sprachbetrachtung;* Bally, *Le langage et la vie* (Geneva, 1913); and Bravetta, *I disturbi del linguaggio* (Pavia, 1913). Handschin's report on *The Facilities For Graduate Instruction In Modern Languages In the United States* (Oxford, Ohio) gives a fairly complete list of all the graduate courses in these subjects offered in the United States, the names of the professors, and the works, including articles, published by them up to that date. The tables at the end of the volume contain the number of students attending these courses in the different institutions of learning, the number of volumes in the libraries, and the number of advanced degrees granted from 1908 to 1913.

INDO-EUROPEAN. Among the most important works in this field we may mention Fay, *Indo-European Verbal Flexion Was Analytical* (Austin, Texas, 1913), in which the author attempts to prove the old theory of Bopp, the founder of philology; Feist, *Indogermanen und Germanen* (Halle); de la Grasserie, *Du verbe comme générateur des autres parties du discours* (Paris), which seeks to prove that the verb is the generator of all parts of speech in the Indo-European, Semitic, and Ural-Altaic languages, by showing that many nouns are derived from verb-roots, a thesis impossible to sustain; Green, *The Dative Of Agency* (New York, 1913), a very valuable contribution to the study of case-syntax; Hirt, *Fragen des Vokalismus und der Stammbildung im Indogermanischen* (Strassburg); Hagen, *Die Indogermanen* (Gütersloh); and finally Brandstetter, *Indonesisch und Indogermanisch in den Lautgesetzen* (Lucerne, announced for 1915).

INDO-IRANIAN. The productions in this field have become less numerous of late. Probably the most important translations appearing during the past two years are those of Hillebrandt, *Lieder der Rigveda* (Leipzig) and Fritze, *Nala und Damayanti*, *Savitri* (Berlin). Other works of importance are Hertel, *Pancatantra;* Mrs. Rhys-Davids, *Psalms of the Early Buddhists* (London, 1913); Garbe, *Indien und das Christentum* (Tübingen); Jouveau-Dubreuil, *Archéologie du sud de l'Inde* (2 vols., Paris); Rapson, *Ancient India* (Cambridge); Vidyabhushana, *The Study of Sanskrit* (Bombay, 1913); Zimmermann, *Die Quellen der Mahânârâyana-Upanishad* (Leipzig, 1913); Gauthiot, *Essai de grammaire sogdienne (groupe iranique)* (Paris); Moulton, *Early Zoroasterianism* (London, 1913); Jackson, *Catalogue of the Collection of Persian MSS. Presented to the Metropolitan Museum of Art by A. S. Cochran* (New York); and Bloomfield, "The Character and Adventures of Muladeva," in the *Proceedings of the American Philosophical Society* (vol. lii, 1913).

Among the modern dialects of India we may note Chatterjee, *Manual of Colloquial Hindustani* and *Bengali* (Calcutta). In the ALBANIAN group, which, though independent, show some elements of kinship to Slavic, Weigand, already well-known for his *Albanesische Grammatik* (Leipzig, 1913), published an *Albanesisch-deutsches, deutsch-albanesisches Wörterbuch* (Leipzig).

Among the works on other dialects not belonging to the Indo-European family we may mention Winstedt, *Malay Grammar* (Oxford, 1913) and *English-Malay Dictionary* (part I, Singapore); Macalister, *Language of the Nawar or Zutt, the Nomad Smiths of Palestine* (London); Martha, *La langue étrusque* (Paris, 1913), containing grammar, texts, and etymological dictionary of Etruscan, which the author believes to be related to the Ugro-Finnish group, contrary to the opinion usually held that it belongs to the Indo-European or Semitic families; Trebitsch, *Baskische Sprach- und Musikaufnahmen* (Vienna), treating a language—Basque—that is now absorbing considerable attention; Ray, *The Languages of Borneo* (Singapore, 1913); Homburger, *Etude sur la phonétique historique du Bantou* (Paris), which concerns the

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* When no date is given it means that the work was issued during the year 1914.

Bantu dialects of Central and South Africa; Setälä, *Väinämöinen und Joukahainen, eine wort- und mythengeschichtliche Studie in Finno-Ugrian* (Helsingfors); and Madan, *Lala-Lamba-Wisa and English Dictionary* (Oxford, 1913), a useful book for the dialects of Congo-Rhodesia.

SLAVIC. Among the many important works which have appeared in this field the following may be noted: Berneker, *Slavisches etymologisches Wörterbuch* (vol. i, A–L, Heidelberg, 1908–13); Agrell, "Intonation und Auslaut im Slavischen" in the *Archives d'études orientales* (Upsula, 1913); Vondrák, *Altkirchenslavische Grammatik* (2d ed., Berlin); and Ilešič, *Die Aussprache des Slovenischen* (Berlin, 1913). In Ruthenian, Smal-Stockyj and Gartner's *Grammatik der ruthenischen (Ukräinischen) Sprache* (Lemberg, 1913) and the former's *Ruthenisch-deutsches Gesprächsbuch* (Berlin) deserve mention. In syntax, Mazon's *Emploi des aspects du verbe russe* (Paris) is of interest. In Czech, which belongs to the northwestern group of the Slavic languages, there are Smetánka, *Tschechisch-deutsches Gesprächsbuch* (Berlin); as well as his *Tschechische Grammatik* (Berlin). Though Hungarian does not belong to the Indo-European group, we may nevertheless mention Simonyi, *Syntax der Attribute* (Vienna) and Tolnai, *Ungarisches Lesebuch mit Glossar* (Berlin, 1913).

CELTIC. Scholars continue the activity that has already been noted in the past in these columns. The 4th volume of Jullian's *Histoire de la Gaule* (Paris), which treats of the government of Rome, is probably the most noteworthy contribution of the year. Thurneysen's *Die Kelten in ihrer Sprache und Literatur* (Bonn) is an interesting discourse delivered in honor of the Kaiser's birthday. Braungart maintains in *Die Südgermanen* (Heidelberg) the theory, which, it behooves us to say, is very difficult of acceptance, that "die Bojer, Vindilizier, Räter, Noriker, Taurisker usw. waren nach all ihren landswirtschaftlichen Geräten und Einrichtungen keine Kelten, sondern Urgermanen höchst warscheinlich das Stammvolk aller Germanen." Such chauvinism is unfortunately detrimental to scholarship. Toward the close of the year 1913 the National Library of Ireland issued its *Bibliography of Irish Philology and of Printed Irish Literature* (Dublin). The main defect of this work, as well as of the *Bibliotheca Celtica* of the National Library of Wales (Aberystwyth, 1913), is a complete absence of method. On account of this great defect these bibliographies can be of little use to others than the initiated. The same can be said of Pokorny's *Concise Old Irish Grammar* (Dublin), containing phonetics and accidence, which could be very useful were it more popular in tone. Besides this defect it contains no information whatever on the derivation of nouns or verbs, or constitution of the sentence. Coffey's *The Bronze Age in Ireland* (Dublin) and Kuno Meyer's *Ueber dieälteste irische Dichtung, II, rhythmische alliterierende reimlose Strophen* (Berlin, 1913) deserve to be mentioned. In the field of Welsh, the 5th edition of Spurrell's *Welsh-English Dictionary*, edited by Rev. J. B. Anwyl and Sir E. Anwyl (Carmarthen), is a most welcome production, inasmuch as an up-to-date work of this kind was greatly needed. Fynes-Clinton, *The Welsh Vocabulary of the Bangor District* (Oxford, 1913) is also an important lexicographical contribution. In Welsh literature we may note the following: Péralté, *L'Esoterisme de Parsifal, la vieille légende celtique du cycle d'Artus* (Paris), an unsatisfactory work from many points of view; Weston, *The Quest of the Holy Grail* (London, 1913); Kinross, *Tristram and Isoult* (New York, 1913); and Sommer, *The Structure of Le Livre d'Artus and Its Function in the Evolution of the Arthurian Prose-Romances* (London). Finally the pamphlet of Oriou, *Des Celtes-Bretons et des Gallo-Bretons* (Vannes, 1913), and Jaffrennou, *Dictionnaire français-breton de poche* (Carhaix), containing 25,000 words, complete the list.

GERMANICS. The efforts of Germanic philologists have been directed for many years mainly to the study of dialects with more or less satisfying results. As we have already indicated above the main objection to these studies is that the men, being mostly candidates for the doctor's degree, are not sufficiently prepared to undertake them. The result is that the studies vary considerably according to the talents of the author. In general linguistics we must first note Krieg's study on *Fritz Mauthners Kritik der Sprache* (Munich), which he characterizes as *eine Revolution der Philosophie;* as well as Sperber's *Ueber den Affekt als Ursache der Sprachveranderung* (Halle). In old Germanic we have Classen, *On Vowel Alliteration in the Old Germanic Languages* (Manchester, 1913); Wessén, *Zur Geschichte der germanischen N-Deklination* (Upsala); Meller, *Die deutsche Namensabstammung am Riesengebirge* (Leipzig); Wesle, *Die althochdeutschen Glossen des Schlettstadter Codex zu kirchlichen Schriften und ihre Verwandten* (Strassburg); Weller, *Die frühmittelhochdeutsche Wiener Genesis und Quellen* (Berlin); Naumann, *Althochdeutsche Grammatik und Althochdeutsches Lesebuch* (Berlin); Loewe, *Germanische Pflanzennamen* (Heidelberg, 1913); Braune, *Abriss der althochdeutschen Grammatik* (5th ed., Halle, 1913); Riese, *Das Rheinische Germanien in den antiken Inschriften* (Leipzig); Wilhelm, *Denkmäler deutscher Prosa des 11. und 12. Jahrhunderts* (Munich); Gutmacher, *Der Wortschatz des althochdeutschen Tatian in seinem Verhältnis zum Altsächsischen, Angelsächsischen und Altfriesischen* (Berlin, 1913); and Köhler, *Lateinisch-althochdeutsches Glossar zur Tatianübersetzung* (Paderborn). Among the grammars the most important are Schulz, *Abriss der deutschen Grammatik* (Strassburg); Curme, *First German Grammar* (New York); Matthias, *Sprachleben und Sprachschäden* (Leipzig); Classen, *Grammar of the German Language* (New York); and Heyse's *Deutsche Grammatik* (28th ed., by Scheel, Hanover). Further studies on the modern language are Franke, *Grundzüge der Schriftsprache Luthers* (2d ed., Halle); Schneider, *Zur Ausgestaltung der deutschen Sprache* (Leipzig); Blümel, *Die Haupttypen der heutigen neuhochdeutschen Wortstellung im Hauptsatz* (Strassburg); Diekhoff, *The German Language* (New York); Wagner, *Einführung in das Studium der deutschen Sprache* (Leipzig); and Winter, *Die Sprache als Mutter meiner Weltanschauung* (Leipzig). Dialectical studies are as usual very numerous. A selection of works is invariably difficult to make because it often happens that an important dialect is not as well treated as a more insignificant one. A work of incalculable value is Müller-Fraureuth's *Wörterbuch der obersächsischen und erzgebirgischen Mundarten*, which has just been completed (Dresden). Vol. viii of the *Schwei-*

zerisches Idiotikon, containing stems in *sch* to *sutz*, was also a noteworthy publication (Frauenfeld). Other works deserving mention are Schoof, *Die Schwälmer Mundart* (Halle); Feller, *Das Fürwort in der Mundart von Gerolzhofen*, a syntactical study of an East Frankish dialect (Würzburg); Schollen, *Aachener Sprichwörter und Redensarten* (2d ed., Aachen, 1913); Stammerjohann, *Die mundart von Burg in Dithmarschen* (Kiel); Berndt, *Die Verba reflexiva in den deutschen Mundarten* (Giessen); Kaupert, *Die Mundart der Herrschaft Schmalkalden* (Marburg); Neuse, *Studien zur niederrheinischen Dialektgeographie in den Kreisen Rees, Dinslaken, Hamborn, Mülheim, Duisburg* (Marburg); Streiff, *Der Vokalismus der Glarner Mundarten* (Zurich); Hanke, *Die Wortstellung im Schlessischen* (Breslau, 1913); Schmidt, *Der Konsonantismus der Bonnländer Mundart* (Giessen); Dose, *Ein Besuch der deutschen Sprachinseln Südtirols* (Leipzig); Kloeke, *Der Vokalismus der Mundart von Finkenwärder bei Hamburg* (Hamburg, 1913); Schneider, *Der Wortschatz der Bamberger Mundart von 1880–1910* (Speyer); and Groeger, *Schweizer Mundarten* (Vienna). Finally the following lexicographical works should be noted: Grimm, *Deutsches Wörterbuch* (Bd. 4, 1. Abt., 4 Tl., 2 Lfg.; Bd. 11, 2. Abt., 1. Lfg.; Bd. 11, 3. Abt., 2 Lfg.; Bd. 12, 1. Abt., 11 Lfg., ed. by Leopold; Bd. 14, 1. Abt., 3 Lfg., ed. by Götze; Bd. 15, 1 Lfg., Leipzig); Kluge, *Etymologisches Wörterbuch der deutschen Sprache* (8th ed., 1st part, Strassburg); Fischer, *Schwäbisches Wörterbuch* (46 Lfg., Tübingen); Goldingham, *Dictionary of Modern Naval Technical Terms: German-English and English-German* (London); and Caspar's *Technical Dictionary: English-German and German-English* (Milwaukee). In Low German and Dutch we note only the following works: Lasch, *Mittelniederdeutsche Grammatik* (Halle); *Woordenboek der Nederlandsche Taal* (vol. iii, 21st fasc.: *Draf-Druiken by Knuttel;* and vol. xiii, fasc. 1: *Riant-Riet* by Van der Maulen, The Hague); van Ginneken, *Handboek der Nederlandsche Taal* (part 1: *De sociologische structuur der Nederlandsche Taal*, Nymegen, 1913); Overdiep, *De vormen van het aoristisch præteritum in de middelnederlandsche epische poësie* (Leiden); and *Beatrijs, A Middle Dutch Legend, Edited With a Grammatical Introduction, Notes and a Glossary* by Barnouw (London). For Frisian we call attention to Brandt, *Die nordfriesische Sprache der Goesharharden* (Halle).

SCANDINAVIAN. Among the Scandinavian group of languages, which have received considerable attention during 1914, the following works in Old Norse first deserve mention: Noreen, *Nordiska ortnamm* (Upsala), consisting, as its title indicates, of a study of place-names; the ninth and tenth volumes of Thule's *Altnordische Dichtung und Prosa* (ed. by Niedner, Jena); the 1st part of the second volume of *De norsk-islandske Skjaldedigtning*, consisting of texts and notes, published under the supervision of Jónsson (Copenhagen); Egilsson, *Lexicon poeticum antiquæ linguæ septentrionalis, ordbog over det norsk-islandske skjaldesprog* (ed. by Jónsson, 1st heft, *a-fyr*, Copenhagen); Neckel, *Edda, Die Lieder des Codex regius nebst verwandten Denkmälern* (Heidelberg); the 1st part of the collection entitled *Norges Kongesagær* (ed. by Storm and Bugge, Christiana); and Thorkelsson, *Anmærkninger til J. Fritzners Ordbog over det gamle norske Sprog* (Reykjavik). As for Icelandic we should mention first Heusler, *Die Anfänge der isländischen Saga* (Berlin); Wenz, *Die Fridpófssaga*, being a critical edition with a complete introduction (Halle); Hermannsson's two contributions, the much desired *Catalogue of the Icelandic Collection Bequeathed by Willard Fiske;* and "The Story of Griselda in Iceland" in vol. vii of *Islandica* (both published at Ithaca); also two works by the assiduous Jónsson, the *Rímnasafn: Samling af de ældste islandske Rimer* (Copenhagen) and *Carmina scaldica*, a study of the forms of Skaldic verse (*ib.*, 1913); Niedner, *Vier Skaldengeschichten* (Jena); Mossé, *La Laxdæla Saga, Légende historique islandaise*, translated into French with introduction and notes (Paris); and Brate, *Sämunds Edda översatt frän isländskan* (Stockholm, 1913); a Swedish translation. In Swedish we have Kock's *Umlaut und Brechung im Altschwedischen* (Lund); Larson-Högsby, *Temporal satsfogning i fornsvenskan* (Lund, 1913); Söderwall, *Ordbok öfver svenska medeltidsspråket* (Lund, 1913); Olson, *Studier över pronomenet 'den' i nysvenskan* (Lund); Noreen, *Vårt Språk*, a complete exposition of Modern Swedish grammar (19th heft, Lund); Pollak, *Proben schwedischer Sprache und Mundart* (Vienna, 1913); Elmquist, *Elementary Swedish Grammar* (Chicago); and finally the Swedish Academy's *Ordbok öfver svenska spraket*, of which the 48th heft has appeared (Lund). As for Danish we must note Wimmer, *De danske runemindesmærker* (ed. by Jacobsen, Copenhagen); Neuhaus, *Modernes Dänisch* (Halle); and Dahl and Hammer's *Dansk Ordbog for Folket* (38 heft: *velmagtsstand-vor*, Copenhagen).

ENGLISH. The contributions to this field of philology have been numerous and valuable, especially from the grammatical and lexicographical point of view. In regard to Beowulf we note several interesting works, such as Müller, *Das Kulturbild des Beowulfepos* (Halle); and Gering's translation of *Beowulf nebst dem Finnsburg-Bruchstück* (2d ed., Heidelberg). Köhler has just completed his new edition of Grein and Holthausen's *Sprachschatz der angelsächsischen Dichter* (Heidelberg, 1912–14); and Williams, *Gnomic Poetry in Anglo-Saxon* (New York) should not be omitted. In Old and Middle English we note Funke, *Die gelehrten lateinischen Lehn- und Fremdwörter in der altenglischen Litteratur*, which comprises the period from the middle of the tenth century to 1066 (Halle); Jensen, *Die I. und II. Ablautreihe in der altenglischen Wortbildung* (Kiel, 1913); Janus, *Der syntaktische Gebrauch des Numerus im Frühmittelenglischen* (Kiel, 1913); and David, *Zur Syntax des adnominalen Genitivs in der frühmittelenglischen Prosa* (Kiel, 1913). The origin and history of place-names have received considerable attention during the past few years in England, with the result that we have several useful monographs devoted to this subject. Among them we may note two works on the place names of Gloucestershire, one by Boddeley (London) and the other by St. Clair (London, 1913); Mutschmann, *Place-names of Nottinghamshire* (Cambridge); and Roberts, *The Place-names of Sussex* (Cambridge). In this connection we must not fail to mention Weekley's excellent *Romance of Names*, giving in a popular way the history of some 3500 English family names. In the modern language we have some interesting studies devoted to special periods of its history, such as Delcourt, *Essai sur la langue de Sir Thomas More d'après ses œuvres anglaises* (Paris); Horten, *Studien über die Sprache Defoes* (Bonn); and Müller, *Englische Lautlehre nach James Elphinston 1765, 1787, 1790* (Heidelberg); as well as special studies like Miss Pound's *Blends*, with especial reference to English word formation (Heidelberg). More attention than formerly has been given to dialectology, where efforts are being made to clear up some of the mysteries of many of these divarications of forms. Among these studies we may note Elizabeth Wright's *Rustic Speech and Folk-lore* (Oxford, 1913), which is based immediately upon Wright's *English Dialect Dictionary;* Klein, *Der Dialect von Stokesley in Yorkshire, North-Riding* (Berlin); Heuser, *Alt-London* (Strassburg), which contains some observations on its dialect; Brilioth, *Grammar of the Dialect of Lorton (Cumberland)* (Upsala, 1913), a historical study containing an appendix on the Scandinavian element and a glossary; Angus, *Glossary of the Shetland Dialect* (London); and Dölle, *Zur Sprache Londons vor Chaucer* (Halle, 1913). But it has been in grammar and lexicography that the most important contributions have been made. We have, for example, Jespersen's *Modern English Grammar on Historical Principles*, which is being published simultaneously in English and Danish, and of which the second part, dealing with syntax, is being issued (Heidelberg and Copenhagen); Wendt, *Syntax des heutigen Englisch*, though inferior to Jespersen's work, is nevertheless of value (part II, Heidelberg); Luick, *Historische Grammatik der englischen Sprache*, of which the first and second *lieferungs* have appeared, is divided into two volumes, of which the first contains phonology and the second morphology (Leipzig); Poutsma's *Grammar of Late Modern English*, of which part II, containing the parts of speech, is now appearing, is especially intended for the use of Dutch and other Continental students (Groningen); Krüger's *Schwierigkeiten des Englischen* has now reached syntax (2d ed., part II, Dresden); the same author's *Englische Ergänzungsgrammatik und Stilistisches* was republished in Dresden (1913, 2d ed.). We called attention in our last report to the marked progress made in recent years in development of English lexicography. On that particular point we should note Vizetelly's *Development of the Dictionary of the English Language* (New York) which treats the question in full. Of the Murray Dictionary, the sections *shastri-shyster* by Bradley (vol. viii), *sorrow-spesh* by Craigie (vol. ix), and *traik-trinity* (vol. x) were issued during the past year (Oxford). Other works deserving mention are Fernold, *Comprehensive Standard Dictionary of the English Language* (New York); Chambers, *English Dictionary* (London), an enlarged edition with supplement; Skeat, *Glossary of Tudor and Stuart Words*, edited with additions by Mayhew (Oxford), prepared especially for dramatists; Price and Peck, *British Empire Universities Modern English Dictionary* (New York); Roget's *Thesaurus*, revised by Mawson (New York), a new edition of a much-used work; Born, *Nachträge zu The Oxford English Dictionary* (part III, Schöneberg); Bumpus, *Dictionary of Ecclesiastical Terms* (London); Torrens and Parker, *English Idiomatic and Slang Expressions Done Into German* (Strassburg); and Schröer, *Neuenglisches Aussprachwörterbuch mit besonderer Berücksichtigung der wichtigsten Eigennamen* (Heidelberg, 1913).

ROMANCE. The continued activity of scholars in this field bespeaks the immense wealth of material at the disposal of the philologist. Among the important general works on these languages the very useful *Romanisches etymologisches Wörterbuch* of Meyer-Lübke (Heidelberg), which bids fair to supplant its worthy predecessor, Körting, has now reached *tabella*. Thus far 8509 words have been treated. Other works of interest are Jud, *Probleme der altromanischen Wortgeographie* (Halle); Grandgent, *Introduzione allo studio del latino volgare*, an Italian translation of the useful little manual (Milan); Zauner, *Romanische Sprachwissenschaft* (3d ed., Berlin); Schneegans, *Romanische Philologie* (Berlin), an address delivered on the occasion of the Kaiser's birthday; Noggler, *Romanische Familiennamen in Obervinschgau* (4th part, Meran, 1913); Richert, *Die Anfänge der romanischen Philologie und die deutsche Romantik* (Halle); and Voretzsch, *Die romanische Philologie und das Studium des Französischen* (Halle). In Old French it is to be noted that Bédier's great *Légendes épiques*, which was completed in 1913, is now undergoing revision in a second edition of which the first volume has appeared (Paris). Foerster, in collaboration with Bruere, has issued an etymological dictionary to the complete works of Chrestien de Troyes (Halle). Other publications deserving mention are Gerhard, *Beiträge zur Kenntnis der prähistorischen französischen Synkope des Pänultimavokals* (Halle, 1913); Mündler, *Der Uebergang von der Assonanz zum Reim im altfranzösischen Volksepos* (Halle); Foulet, *Le Roman de Renard* (Paris); and Schwarz, *Der Gebrauch der Präpositionen 'a' und 'en' im altfranzösischen Rolandsliede* (Greifswald). In French dialectology the most important contribution is Terracher's *Etude de géographie linguistique: les Aires morphologiques dans les parlers populaires du nord-ouest de l'Angoumois (1800–1900)* (Paris), a model of critical acumen. The first and second fascicles of the supplement to Gilliéron and Edmont's masterly *Atlas linguistique de la France*, which has often been mentioned here, are devoted to Corsica (Paris). Gilliéron himself has issued *L'Aire Clavellus d'après l'Atlas linguistique de la France* (Neuveville). Among numerous other works we may mention Juret, *Glossaire du patois de Pierrecourt (Haute-Saône)* (Halle, 1913); Bruneau, *Enquête linguistique sur les patois d'Ardenne* (vol. i, Paris); Tappolet, *Die alemannischen Lehnwörter in den Mundarten der französischen Schweiz* (1st part, Strassburg); Merian, *Die französischen Namen des Regenbogens* (Halle); Pastre, *Le sous-dialecte bas-languedocien de Clermont-l'Hérault* (Perpignan, 1913); Brod, *Die Mundart der Kantone Château-Salins und Vic in Lothringen* (Strassburg, 1913); Daniel, *Dictionnaire français-périgourdin* (Périgueux); and Perrenot, *Etudes de toponymie franc-comtoise* (3d fasc., Besançon). Among the contributions to the study of the modern language we may note Glauser and Curtius, *Die französische Sprache der Gegenwart*, the first part being devoted to phonology (Heidelberg), Ricken, *Das Studium des Französischen und Englischen* (Leipzig); Perron-Cabus, *Le participe présent dans le français ancien et moderne* (Bologna); Mönch, *Die Ver-*

wendung des Gerundiums und des Participiums Præsentis im Französischen (Göttingen); Gohin, *La langue française* (Paris, 1913) which won the prize of eloquence of the French Academy; Schmidt, *Die spanische Elemente im französischen Wortschatz* (Halle); Soltmann, *Syntax der Modi im modernen Französisch* (Halle); Bergmann, *Idiomes: Gallicismes-Germanismes* (Magdeburg, 1913); Lenz, *Zur Lautlehre der französischen Elemente in den schottischen Dichtungen von 1500–1550* (Marburg, 1913); Soave, *Locutions familières de la langue française* (Verona); Lerch, *Das invariable Participium præsentis des Französischen (une femme aimant la vertu)* (Erlangen, 1913); Lorck, *Passé défini, Imparfait, Passé indéfini* (Heidelberg); and Rose, *Germanische Lehnwörter im Französischen* (Leipzig). As for general works on historical grammar we can only mention the most important, which are Nyrop, *Grammaire historique de la langue française* (vol. i, 3d ed., Copenhagen); Bourciez, *Précis historique de phonétique française* (4th ed., Paris); Schwan-Behrens, *Grammatik des Altfranzösischen* (10th ed., Leipzig, 1913); Staaff, *Etude sur quelques problèmes de phonétique française* (Upsala); and finally the Among the practical dictionaries there are: text-book, Lafitte, *French Grammar* (London). Beaux, *Deutsch-französisches und französisch-deutsches Wörterbuch für Elektrotechniker* (Berlin, 1913); Charbot and Blanchet, *Dictionnaires des patois du Dauphiné* (Grenoble); Sabersky, *Pocket Dictionary of the English and French Languages* (London); and a *French Nautical Phrase Book and Reader* by the U. S. Naval Academy (Annapolis). In Provençal we have the 33d heft of Levy, *Provenzalisches Supplement-Wörterbuch (sezilhsolam)* (Leipzig); Ronjat, *Essai de syntaxe des parlers provençaux modernes* (Mâcon, 1913); Hubschmied, *Die Bildung des Imperfekts im Frankoprovenzalischen* (Halle); Gerig, *Die Terminologie der Hanf- und Flachskultur in den frankoprovenzalischen Mundarten* (Heidelberg), in which the author pretends that these words are of Celtic or Germanic origin; Portal, *Grammatica provenzale (lingua moderna) e dizionarietto provenzale-italiano* (Milan); and Zanders, *Die altprovenzalische Prosanovelle* (Halle, 1913).

Italian philologists have been more productive than usual during the past year. Among their contributions the following deserve mention: Battisti, *Testi dialettali italiani* (Halle), giving a selection of texts of the northern dialects; Kupsch, *Formenlehre des Altund Neusizilianischen Dialektes* (Bonn, 1913); Bertoni, *Per la storia del dialetto di Modena* (Turin); Garzià, *Il vocabolario dannuziano* (Bologna), a study in the evolution of the modern language, considering especially the neologisms introduced by D'Annunzio; Terracini, *La lingua delle canzoni popolari piemontesi* (Turin); the same author's *Il parlare d'Usseglio* (Turin, 1913). A few dictionaries should also be noted: Petrocchi, *Piccolo Dizionario della Lingua italiana* (new ed., Milan); *Vocabolario degli Accademici della Crusca* (5th ed., vol. xi, fasc. 1, Florence); Nicotra d'Urso, *Nuovissimo dizionario siciliano-italiano*, containing words and phrases in Sicilian that differ from Italian; Pecorella, *Vocabolario numerico siciliano-italiano per la interpretazione dei sogni* (Milan); Enenkel and McLaughlin, *New Dictionary of the English and Italian Languages* (Paris); Premoli, *Vocabolario nomenclatore illustrato* (Milan; 2 vols.); Levi, *Vocabolario etimologico della lingua italiana* (Leghorn); Orsat-Ponard, *Vocabolario delle idee* (Milan); and Darchini, *Dizionario tascabile italiano-francese* (Milan). Finally, the following grammars should not be omitted: Rostagno, *Grammatica della lingua italiana* (Turin, 1913); and Bottiglioni, *Nuova grammatica italiana* (Palermo).

In Rheto-Romance, Decurtins, *Rätoromanische Chresthomathie* (vol. x, lief. 1, Erlangen); Battisti, *Die Mundart von Valvestino*, and Ettmayer, *Die geschichtlichen Grundlagen der Sprachenverteilung in Tirol* (Vienna) are the only works of note. The Rumanian Academy has issued parts of vols. i and ii of the *Dictionarul limbii române* during the past year (Bucharest). Among other publications treating of that language there is the well-known *Histoire de la langue roumaine* by Densusianu, of which the part of vol. ii devoted to the language of the sixteenth century has just appeared (Paris): as well as Popovici, *Dialectele romîne*, being vol. ix which treats of the dialects of Istria (Halle). Other works are Teutsch, *Rumänisches Sprachbuch* (2d ed., Kronstadt, 1913); Axelrad, *English-Rumanian and Rumanian-English Translator and Dictionary* (Milwaukee); Auerbach, *Die Verbalpräfixe im Dakorumänischen* (Leipzig, 1913); Schuffert, *Die Verbalsuffixe im Dakorumänischen* (Leipzig, 1913); Rizo, *Nouveau vocabulaire français-roumain* (Paris); and Bogdan, *Altă ortografie* (Bucharest).

The contributions to Spanish philology, though not as numerous as those in other fields, are nevertheless interesting. García de Diego's *Elementos de gramática histórica castellana* (Burgos) is a popular work. Vogel's *Einführung in das Spanische für Lateinkunde* (Paderborn) is useful for those who will approach Spanish from the classical point of view. Among the dialectical studies we have Román, *Diccionario de chilenismos y de otras voces y locuciones viciosas* (vol. iii, Santiago, 1913); Sanchez, *Spanish and Indian Place-names of California* (San Francisco); Selva, *Acepciones nuevas: ensayo de semantica argentina* (Buenos Aires); Halse, *Dictionary of Spanish-American, Portuguese and Portuguese-American Mining and Allied Terms* (2d ed., London); Molina Nadal, *Vocabulario argentino-español y español-argentino* (Madrid, 1913); and Verdulla, *Elementos de ciencia gramatical de la lengua hispano-americana* (Barcelona). Other works to be noted are Hahn, *Diccionario aleman-español de términos de medicina* (Madrid); Martínez Mier, *Método de ortografía española* (Madrid); and Galocha y Alonso, *Gramática fundamental de la lengua castellana* (Madrid).

In Portuguese, Taunay, *Lexico de lacunas* (Tours); Basto, *Nótulas ao 'Novo Diccionario'* (Viana-do-Castelo, 1913); Teschauer, *Apostillas ao 'Diccionario de Vocabulos Brasileiros'* (Petropolis); and Basset, *Notes sur la langue de la Guiné au xve siècle* (Coimbra, 1913) are only a few that are worthy of mention. During the year 1914 the *Butlletí de dialectologia catalana* was founded at Barcelona for the purpose of studying all the dialects of the Catalan language. The first number of this quarterly review is characteristic. Before leaving this interesting language we should note Rovira i Virgili, *Diccionari catalá-castellá y castellá-catalá*

(Barcelona, 1913), one of the first practical dictionaries we have of Catalan.

Phonetics. There have been a number of revisions of standard works in phonetics during the year 1914. Among them we note Nyrop, *Manuel phonétique du français parlé* (3d ed., Copenhagen), an accurate and useful work; Passy, *The Sounds of the French Language* (London); and the Michaëlis and Passy, *Dictionnaire phonétique de la langue française* (2d ed., Hanover). Other works of interest are: Keraval, *Petit précis de prononciation française à l'usage des étrangers* (Paris, 1913); Jones, *Outlines of English Phonetics* (Leipzig); Klinghardt, *Artikulations- und Hörübungen* (2d ed., Cöthen); Egan, *German Phonetic Reader* (London, 1913); Panconcelli-Calzia, *Einführung in die angewandte Phonetik* (Berlin); Castellazzo, *Manuale di ortografia francese* (Leghorn); Johnston, *Phonetic Spelling* (Cambridge, 1913), a proposed universal alphabet; Gómez, *Ortografía ideal* (Madrid), an effort to reform Spanish orthography; Biaggi-Gradenigo and Stefanini, *Studi italiani di fonetica sperimentale* (Padua); and Wild, *Sounds and Signs* (London), a criticism of the alphabet with suggestions for reform.

PHILOSOPHY. New Tendencies. We have pointed out, in preceding volumes of the Year Book, a marked opposition in contemporary thought to the rationalistic and idealistic system of philosophy which developed in Germany after the time of Immanuel Kant and gradually gained the ascendency in the leading countries of Europe and America in the course of the nineteenth century. Within the last decade or so, the traditional school has been subjected to severe criticism as to its methods and results, and many antagonistic sects have sprung up—the most conspicuous in the United States, England, and France—which single out various phases of its doctrine for attack. For some thinkers the old idealism is too intellectualistic or rationalistic; they accuse it of ignoring the legitimate demands of the feelings and the will, and seek to construct theories which shall secure for the individual a dignified place in the scheme of things. Idealistic positivists, pragmatists, Bergsonian intuitionists, value-philosophers, and mystics discredit the human intellect as an absolute truth-teller and conceive it as a fashioner of fictions, symbols, or conventions, or as an instrument in the service of the human will, or they concede to it only a limited scope as a function of knowledge. Bergson and his followers, while agreeing in part with the pragmatists, restrict the intelligence to the world of dead matter and call to its aid the faculty of "intuition," which alone can interpret life and consciousness. This antirationalistic temper has received support from the ranks of natural science itself—from those who look upon scientific concepts and theories either as mere descriptions of the facts of experience (sensations), or as useful symbols, conventions, or working-hypotheses. According to some of the opponents of the old philosophy, the incompetence of human reason makes metaphysics illusory or necessitates its relegation to the realm of poetry or religion; while others, seeking a surer source of knowledge in other functions of the human soul—in feeling, belief, immediate or pure experience, will or intuition—find through these a way of escape from skepticism, mechanism, determinism, atheism, and all the discouraging doctrines to which rationalism is supposed to lead, and against which the free individual revolts. Another group of thinkers, the neo-realists, oppose the antirationalistic tendencies of the times, and see in the scientific method the only hope for a sound philosophy. But they repudiate the idealistic theory of internal or organic relations, and regard the method of analysis, which Hegelians as well as pragmatists and Bergsonians condemn as inadequate, as the only genuine instrument of truth. In opposition to idealistic *monism*, however, neo-realism teaches pluralism and realism, conceiving these doctrines as the logical outcome of the analytic method. (Consult Thilly, *History of Philosophy*, pp. 562 ff.)

It is not to be wondered, under the circumstances, that problems of the nature and method of knowledge (theory of knowledge or epistemology) form so large a portion of the philosophical literature of recent years. Nor is it remarkable that ethical questions, questions concerning human values, which form the underlying *motif* of so many of our new philosophies, should receive the attention they are receiving to-day. The American Philosophical Association devoted a considerable number of its sessions at the Christmas meeting of 1913 to the discussion of the problem of value; and since that time many articles on the subject have appeared in our American philosophical periodicals. A further reason for the widespread interest in ethical questions is to be sought in the social unrest of the day and in the demand for political, economic, and social reforms. In April, 1914, a meeting of the Conference on Legal and Social Philosophy was held at the Law School of the University of Chicago, in coöperation with the Western Philosophical Association, at which questions were discussed dealing with the borderland of ethics, jurisprudence, politics, economics, and sociology. (Consult Report of the Proceedings of this Conference in *International Journal of Ethics*, October, 1914.) The editorial staff of the *International Journal of Ethics* has been reorganized with a view to giving "especial prominence to the principles of justice and of law as the agency of justice." The programme of the Joint Meeting of the American and Western Philosophical Associations, held at Chicago, Christmas, 1914, was almost entirely given over to questions of ethics, politics, law, and the like. The General Topic of the meeting was: "What Can Philosophy Contribute to Conceptions of Justice?"; the subject of the joint session of these societies with the American Political Science Association and the Conference on Legal and Social Philosophy was: "Constitutional and Political Guarantees."

Recent Literature of the Contending Schools. One of the most welcome additions of the year to the literature of idealism is the translation from the Italian of Croce's *What is Living and What is Dead of the Philosophy of Hegel*. In this able work the greatest Italian student and follower of Hegelianism has given perhaps the clearest interpretation and sanest criticism of Hegel's philosophy that have yet been offered. The English Neo-Hegelian, F. H. Bradley, aims to define and defend his metaphysical system against pragmatism in *Essays on Truth and Reality*, a collection of papers already published separately, most of them in

Mind. The October number of *Mind* contains a sensible article by Professor Ladd on "A Defense of Idealism," in which the author reaches the following conclusion: "Pragmatism and the new realism may serve for a day or two to prune away some of the inconsistencies and exaggerations of the current forms of idealism. But when the time of its pruning and chastening is past—and it soon will be past—a new and improved idealism will come to the fore." In his new book, *What Can I Know?* the same writer offers "an inquiry into truth, its nature, the means of its attainment, and its relations to practical life" which will prove useful to students of pending problems. Another interesting and important work is the translation from the Italian of Aliotta's *Idealistic Reaction against Science*, in which the author shows that the recent reactionary movements are in the right against an extreme scientific and mathematical intellectualism that makes of mechanism the sole method of knowledge, but that they fail against a genuine intellectualism, one that upholds the supremacy of intelligence over imagination and will. He points out that such an extreme scientific intellectualism always produces a more or less mystical idealistic irrationalism as a reaction; we find it, according to him, in German and French neo-criticism (Riehl and Renouvier), in the empirio-criticism of Mach and Avenarius, in English Neo-Hegelianism, in the intuitionism of Bergson, in the Anglo-American pragmatism of James, Dewey, and Schiller, in the philosophy of value and historicism of Rickert, Croce, Münsterberg, and Royce. As examples of exaggerated intellectualism he mentions Schuppe's philosophy of immanence, Cohen's idealism of pure knowledge, Nelson's neo-Friesian school, Meinong's and Höfler's *Gegenstandstheorie;* and he might properly have added contemporary English and American neo-realism.

The appearance of the second edition of Vaihinger's *Die Philosophie des Als-Ob*, a book which belongs to the anti-intellectualistic camp, has provoked much discussion in German philosophical journals. Many articles for and against pragmatism, Bergson, and neo-realism are appearing, particularly in American, English, and French periodicals. Among the books in these fields we mention: Pragmatism—Knox, *Philosophy of William James;* Father Tyrrell, *Essays on Faith and Immortality;* Kallen, *William James and Henri Bergson;* Stebbing, *Pragmatism and French Voluntarism;* Bloch, *Der Pragmatismus von James und Schiller;* Papini, *Sul pragmatismo.* Bergson—Carr, *The Philosophy of Change;* Ruhe and Paul, *Henri Bergson;* B. Russell, *Philosophy of Bergson;* Lovejoy, *Bergson and Romantic Evolutionism;* Wilm, *Henri Bergson;* Sait, *The Ethical Implications of Bergson's Philosophy;* Höffding, *H. Bergson's Filosofi;* Maritain, *La philosophie bergsonienne;* Asty, *Lucidité et intuition;* Florian, *Der Begriff der Zeit bei Bergson.* Neo-realism—B. Russell, *Our Knowledge of the External World as a Field for Scientific Method in Philosophy;* S. Alexander, "Basis of Realism" (*Proceedings of the British Academy,* vol. vi); E. B. Holt, *The Concept of Consciousness.* A critical study of realism is given by Broad in his *Perception, Physics, and Reality, An Inquiry into the Information that Physical Science Can Supply about the Real.*

Metaphysics. One of the most interesting contributions to this field is a translation from the Italian of Varisco's *The Great Problems*, to which attention was called in the Year Book of 1912. Father Coffey offers in his *Ontology or the Theory of Being* a metaphysical theory based on the philosophy of Thomas Aquinas, the official system of the Catholic Church. From the scientific side we have books by the chemist Ostwald on *Moderne Naturphilosophie* and the biologists Haeckel, *Good-Natur*, and Uexkull, *Bausteine zu einer biologischen Weltanschauung.* Other works are: F. B. Jevons, *Philosophy: What it is;* Rashdall, *Philosophy and Religion;* Windelband, *Einleitung in die Philosophie;* Cellarier, *La métaphysique et sa méthode;* Geyser, *Die Seele;* Kostyleff, *Le méchanisme cérébral de la pensée;* Soedberg, *Die Materie;* Bartoli, *Scienza cosmica.* Of interest to the philosopher are the following: the translations of the German neo-vitalist Driesch's books, *The Problem of Individuality*, and *History and Theory of Vitalism;* Johnstone, *Philosophy of Biology;* Schmucker, *Meaning of Evolution;* Lanessan, *Transformisme et créationisme;* Gramont-Lesparre, *Les inconnus de la biologie;* Cohen-Kysper, *Die mechanistischen Grundgesetze des Lebens;* Planck, *Neue Bahnen der physikalischen Erkenntnis;* Volterra and other scholars, *Poincaré;* articles by A. Rey on the electron in *Revue philosophique*, November and December, 1913, April and May, 1914; also Stout, *Manual of Psychology*, 3d edition; Ogden, *Introduction to General Psychology;* Münsterberg, *Psychology: General and Applied;* Kleinpeter, *Einführung in die Psychologie.*

Logic and Theory of Knowledge. The literature in this field is, as usual, very large, the number of articles in the philosophical journals exceeding that of any other subject. Husserl, the leader of a new movement in Germany which he calls "phenomenological philosophy," presents his view in a long essay (323 pages), entitled "Ideas on a Pure Phenomenology and Phenomenological Philosophy," in the first volume of a new journal, *Jahrbuch für Philosophie und phänomenologische Forschung*, conducted by him in coöperation with a number of his followers (consult review of this volume by Bosanquet in the October number of *Mind*). Other important books (besides those mentioned under *Recent Literature of the Contending Schools*) are: translation of Enriques, *Problems of Science* (treatment of problems of scientific methodology); translation of Boutroux, *Natural Law in Science and Philosophy;* translation of Couturat, *The Algebra of Logic;* Cohen, *Logik der reinen Erkenntnis*, 2d edition; Silberstein, *Principle of Relativity.* We mention also: Griffin, Dunlap, Lovejoy, *Current Philosophical Questions;* Hartmann, *A New Conception of Relativity and Locke;* Walter, *Nature and Cognition of Space and Time;* Switalski, *Der Begriff vom Denken und Erkennen;* Ziehen, *Zum gegenwärtigen Stand der Erkenntnistheorie;* König, *Neue Grundlage der Logik, Arithmetik und Mengenlehre;* Sternberg, *Zur Logik der Geschichtswissenschaft;* Borel, *Le hasard;* Bachelier, *Le jeu, la chance, le hasard;* Ranzoli, *Il caso nel pensiero e nella vita;* A. Sidgwick, *Elementary Logic;* L. J. Russell, *Introduction to Logic from Standpoint of Education.*

Ethics. We have already called attention, in our opening section, to the great activity in the field of ethics and to the wide interest of this science in the practical questions of the day, social, political, legal, and economic. Characteristic of the new tendencies in modern ethical thought is the college textbook of Drake, *Problems of Conduct*, which is divided into four parts, discussing, respectively, the evolution of morality, the theory of morality, personal morality, and public morality. Works largely concerned with the principles of morality are: Rashdall, *Is Conscience an Emotion?;* Heymans, *Einführung in die Ethik;* Scheler, *Der Formalismus in der Ethik;* Vecchio, *Il nuovo problema della morale;* Rensi, *La transcendenza: studio sulle probleme morale;* Juvalta, *Il vecchio e il nuovo problema della morale;* Valli, *Il valore supremo;* Nelson, *Die Theorie des Interesses;* Lessing, *Studien zur Wertaxiomatik;* Vinet, *Philosophie morale et sociale;* G. Cohn, *Etik og sociologi;* Paulhan, *La morale de l'ironie;* Gay, *L'honneur;* Werner, *Problem der menschlichen Willensfreiheit.* Of practical interest: Michels, *Sexual Ethics;* F. Gaultier, *Les maladies sociales;* Maxwell, *Le concept social du crime;* Blondel, *La conscience morbide;* Juquelier et Vinchon, *Les limites du vol morbide;* Boigey, *Introduction à la médicine des passions;* Koch, *Wesen und Wertung des Luxus;* Squillace, *La moda.* The student of ethics will find Shand's *Foundation of Character* a valuable help.

HISTORY OF ETHICAL THEORY AND PRACTICE, ETHICAL PROGRESS, SOCIAL REFORM, ETC. Navarro, *Historia de la eticas;* Hennebicq, *L'idée du juste dans l'Orient Grec avant Socrate;* Makarewicz, *Grundproblem der Ethik bei Aristoteles;* Limentani, *La morale della simpatia* (Adam Smith); Dugas, *Penseurs libres et liberté de pensée* (Montaigne, Descartes, Mill, Gosse); Stadler, *Spencer's Ethik;* Lachmann, *Protagoras, Stirner, Nietzsche;* Görland, *Ethik als Kritik der Weltgeschichte;* Finot, *Progrès et bonheur,* 2 vols.; Cornill, *Culture of Ancient Israel;* Richard, *La question sociale et le mouvement philosophique du xix siècle;* Weinel and Widgery, *Jesus in the Nineteenth Century and After;* Eucken, *Can We Still be Christians?;* Eucken, *Zur Samlung der Geister;* J. Cohn, *Sinn der gegenwärtigen Kultur;* Berolzheimer, *Moral und Gesellschaft des 20. Jahrhunderts* (an excellent account of present ethical and social conditions by an eminent German jurist); Draghicesco, *L'idéal créateur: essai psycho-sociologique sur l'évolution sociale;* Chapin, *Introduction to the Study of Social Evolution* (prehistoric period); Verroques, *L'histoire de la famille;* Hartley, *Position of Women in Primitive Society;* Mallock, *Social Reform;* Wallas, *The Great Society;* Cunningham, *Christianity and Economic Science;* Kohler, *Der unlautere Wettbewerb.*

LEGAL AND POLITICAL PHILOSOPHY. Ihering, *Law as a Means to an End* (translation of the able work of the celebrated Austrian jurist); Vinogradoff, *Common Sense in Law;* Kohler, *Recht und Persönlichkeit in der Kultur der Gegenwart;* Radbruch, *Grundzüge der Rechtsphilosophie;* Calo, *Saggi critici: filosofia del diritto;* Consentini, *Filosofia del diritto;* Miceli, *Principi di filosofia del diritto;* Lewkowitz, *Die klassische Rechts- und Staatsphilsophie* (from Montaigne to Hegel); Day, *Catholic Democracy: Individualism and Socialism;* Schmitt, *Der Wert des Staates und die Bedeutung des Einzelnen;* Lowell, *Public Opinion;* Dicey, *Law and Public Opinion in England during the Nineteenth Century;* Bauer, *Die öffentliche Meinung;* Halbwachs, *L'homme moyen: essai sur Quetelet et la statistique morale.*

HISTORY OF PHILOSOPHY. Thilly, *History of Philosophy;* Weber, *Histoire de la philosophie européenne;* Burnet, *Greek Philosophy,* part I: Thales to Plato; Dilthey, *Weltanschauung und Analyse des Menschen seit Renaissance und Reformation;* Merlant, *De Montaigne à Vauvenargues;* Jones, *Spiritual Reformers in the Sixteenth and Seventeenth Centuries;* Zanta, *La renaissance du Stoicisme au xvi. siècle;* Ueberweg, *Geschichte der Philosophie der Neuzeit* (to end of eighteenth century), 11th edition; Löwenheim, *Die Wissenschaft Demokrits;* M. Wundt, *Plato's Leben und Werke;* Natorp, *Plato's Ideenlehre;* Jaeger, *Nemesius von Emesa;* Schmekel, *Die positivistische Philosophie* (Isidor of Seville); *Beiträge zur Geschichte der Philosophie des Mittelalters,* ed. by Baeumker; Horten, *Eiführung in die höhere Geisteskultur des Islams;* *Roger Bacon Essays,* ed. by Little; Knox, *Life of Henry Suso;* Troilo, *La filosofia di Giordano Bruno;* Bailey, *Milton and Jacob Boehme;* Scholz, *Die Religionsphilosophie des Herbert von Cherbury;* Heimsoeth, *Die Methode der Erkenntnis bei Descartes und Leibniz,* part II; Huan, *Le Dieu de Spinoza;* Bohrmann, *Spinoza's Stellung zur Religion;* Cassirer, *Berkeley's System;* De Morgan, *Essays on the Life and Work of Newton;* Roretz, *Diderot's Weltanschauung;* Whitney and Fogel, *Introduction to Kant;* Chamberlain, *Kant;* Köster, *Der junge Kant;* Kroner, *Kant's Weltanschauung;* Galli, *Kant e Rosmini;* Trivero, *Nuova critica della morale kantiana;* Medicus, *Fichte's Leben;* Weinel, *Fichte;* Hedvall, *Fichte's filosofi;* Hirsch, *Fichte's Religionsphilosophie;* Loew, *Ethik Schleiermacher's und Kant;* Valette, *Maine de Biran: critique et disciple de Pascal;* M. Schinz, *Die Anfänge des franzözischen Positivismus,* vol. i; Ostwald, *A. Comte;* Uhde-Bernays, *Feuerbach;* Kormann, *Schopenhauer und Mainländer;* Crespi, *Meditazioni spenceriane;* Tillett, *Spencer's Synthetic Philosophy;* C. L. Morgan, *Spencer's Philosophy of Science;* Brandes, *Nietzsche;* Carus, *Nietzsche;* Flemming, *Nietzsche's Metaphysik;* Gorgicas, *Nietzsche's Stellung zur Philosophie;* Mamelet, *Le relativisme: philosophie de G. Simmel.*

REPRINTS, NEW EDITIONS, ETC. Ritter and Preller, *Historia philosophiæ græcæ;* Shaftesbury's *New Characters,* etc., edited by Rand; Pascal's works; works of Spinoza, ed. by Van Vloten and Land, 3d ed., 4 vols.; *Letters of Spinoza,* ed. by Gebhardt; *Lives of Spinoza,* ed. by Gebhardt; *Correspondence of Berkeley and Percival,* ed. by Rand; unedited works of Voltaire; Tetens, *Philosophische Versuche,* vol. i; selected works of Kant; a hitherto unpublished essay of Kant, ed. by Kullmann; Fries, *Philosophische Rechtslehre;* Schelling, *Briefe über Dogmatismus und Kriticismus,* ed. by Braun; Bentham's *Theory of Legislation,* translated and edited from the French of E. Dumont, by Atkinson; posthumous writings of Schopenhauer, ed. by Deussen; Bolzano, *Wissenschaftslehre.*

PHOSPHATE. See FERTILIZERS.

PHOTO-ELECTRIC PHENOMENA. See PHYSICS.

PHOTOGRAPHY. Reports from the European War during the latter part of the year

1914 demonstrated the wide and ever-increasing adaptability of photography to military uses, particularly in reconnoitering. A British aëroplane was provided with a camera adapted to take a series of pictures of the country over which the plane was passing, which pictures later could be enlarged as desired. Exposure could be started, stopped, and regulated by the pilot by means of a small lever conveniently located, and the film was wound on two reels like those in a kinetoscope, deriving their motion from a small propeller, which was set in motion by the air current flowing past the plane. The camera was so arranged that at every exposure the aneroid barometer and compass were simultaneously photographed, so that when developed, the pictures on the film could be identified as to elevation and direction. It was stated that satisfactory photographs were made at as great an elevation as 4000 feet. Another ingenious device for obtaining photographic records of an enemy's position or fortifications was reported to be in use by the French army. A small camera made of the lightest possible materials and weighing only 2½ ounces, was fastened to the breast of a carrier pigeon. The exposure was regulated by a shutter arranged to operate by clockwork at a definite time after the bird was released, and means were provided for taking eight successive pictures. The well-known habit of certain kinds of pigeons to return to the locality of their "cote," insured the bird's return within a reasonable time, and it was reported that many successful pictures were secured.

One of the most important inventions of the year was that of the autographic kodak film, for which the Eastman Kodak Company paid the inventor, Henry J. Gaisman, $300,000. A specially prepared tissue used in connection with a thin red paper, was applied to the back of the film, and through an opening in the camera case provided with a hinged cover, the date, exposure, or locality of the subject could be recorded by means of a stylus or hard point pencil. The inscription, which was made on the tissue paper, when exposed to the light for a few moments made a negative on the edge of the film. This when developed in the usual manner furnished a permanent record of any particulars desired by the photographer.

Experiments in the photography of objects under water, mentioned in the 1913 YEAR BOOK, were continued during 1914, and by means of a cinematograph camera a number of excellent films were secured of plants, fish, rocks, sunken objects, etc., which were widely exhibited in moving-picture theatres. The apparatus was improved in the respect of providing a convenient working chamber that could be lowered to depths as great as 60 feet by means of a collapsible steel tube. While for many cases an artificial illumination provided by powerful mercury vapor lamps was employed, a number of successful films were secured without this aid, on account of the transparency of the water in the southern latitudes off the Bahama Islands, where the best pictures were obtained.

During the year a careful investigation was made of the adaptability of gas-filled tungsten lamps for photographic purposes. It was found that for certain classes of work the tungsten lamp was superior to the mercury-vapor lamp, because the small size of the filament made it possible to concentrate the light more readily. On the other hand the actinic radiations of the tungsten lamp not being so powerful as those of the mercury vapor unit, there was little prospect that the latter would be replaced by the newer illuminant, to more than a limited extent. In ortho-chromatic photography it was found that gas-filled tungsten lamps, in connection with suitable color-screens, made a satisfactory substitute for daylight. Highly interesting and instructive moving pictures were made of the Aurora Borealis by Carl Störmer at Bossekop in Lapland. This observer secured three satisfactory films of this phenomenon, by giving an unusually slow motion to the film so that each exposure had a duration of between one-half and one second. A new flashlight powder was invented for use in place of the commonly used magnesium, to overcome the objectionable feature possessed by the latter of giving off an excessive smoke when ignited. The new powder, which was called "Excelsior," was composed of magnesium and peroxide of lanthanium, combined with some of the rare earths used in the making of Welsbach mantles. On ignition a scarcely perceptible amount of smoke was produced.

Some progress was reported during the year in color photography by C. E. Kenneth Mees and John G. Catstaff, who announced a modification of the Ives three-color process. Only two colors, red and green, were used, however. By means of a special camera or an ordinary camera provided with color-screens, two negatives were taken. These negatives were treated with dyes of such composition that they replaced the silver on the film. The plates thus became their own positives. It was reported that this process gave satisfactory reproductions of colors both for portraits and for fabrics as well, but was open to the objection that the picture must be viewed by transmitted light as the two plates had to be superimposed and mounted in a frame with a suitable electric lamp behind them when exhibited.

The most important event of the year in connection with litigation was the decree handed down in the case of the Goodwin Film and Camera Co. vs. the Eastman Kodak Co., sustaining the validity of the film patent 610,861, issued to Hannibal Goodwin, Sept. 13, 1898. The patent granted was based on the means of providing a transparent film for use in cameras and having nitrocellulose dissolved in nitrobenzol as its principal ingredient. This was the fundamental invention of the kodak film. The case was interesting not only on account of its importance in technology, but also because of the long delays in the patent office and in the courts. The original application was filed in May, 1887, patent granted Sept. 13, 1898, and 10 years and 8 months elapsed after an infringement suit was brought, before a decision was handed down. The inventor died in the meantime, 1900.

PHYSICS. As was to be expected from the very fruitful results in 1913 from the work on X-rays and crystals, the year 1914 witnessed rapid progress along this very fascinating line of investigation. Partly as a result of the work with X-rays, much attention was devoted to the theory of atomic structure and several researches have been carried out primarily because of their bearing upon this subject. From the mass of conflicting opinions and suggested theories some rather definite results emerged which seemed to have been accepted at least tentatively by the leaders in this work. As the development of this theory seems to be the most important feature of the work for the year, an attempt will be made in this review to give a résumé of the fundamental ideas involved in it as was done in the 1913 Year Book with the work on X-rays and crystals.

In the literature for 1914 special attention should be called to the further work of Wood and his associates on resonance spectra; the additional data on the radioactive substances; the work on photo-electric phenomena; the investigations, both theoretical and experimental, of thermionic currents; the contributions to theoretical physics in relativity, and quantum theory; and the continued work by Kamerlingh Onnes and his associates on phenomena at very low temperatures. Among other investigations which are not so closely connected with the reviews of past years was the work by Michelson on the elastic constants of the earth. Not the least of the lamentable consequences of the European War was its effect upon productive scientific work, especially in the English and German universities.

Atomic Structure. Few more attractive subjects of study and speculation can be imagined than the search for a satisfactory theory of the ultimate constitution of matter. In the 1911 Year Book brief outlines were given of three different theories of atomic structure each of which had advantages in explaining certain accepted experimental results. The theory suggested in 1911 by Rutherford assumed that the atom consisted of a central nucleus of positive electricity surrounded by one or more rings of electrons. The experiments of Geiger, Marsden, and others on the scattering of α and β particles in passing through matter were the immediate cause of the formulation of this theory. In order to account for the results of these experiments Rutherford showed that the dimensions of the positive nucleus must be very small in comparison with those of the atom itself. He calculated that the radius of the nucleus must be less than 3×10^{-12} cm. while the radius of the atom is about 1×10^{-8} cm. He also concluded that the central charge for any given element must be numerically equal to the charge on an electron multiplied by approximately half the atomic weight of the element.

In the latter half of 1913, Dr. N. Bohr published three papers dealing with the theory of such a "planetary" atom. His assumptions include the idea that practically the entire mass of the atom is due to the positive nucleus. The *internal structure* of this nucleus has no influence on the chemical and physical properties of the substance; these are due only to its mass and total charge. But any radioactive properties must find their explanation in the nuclear structure.

According to Rutherford's theory, the amount of scattering of α particles per atom divided by the square of the charge on the positive nucleus should be constant. Later experiments by Geiger and Marsden (1913) showed that this was not exactly true on the assumption that the nuclear charge was proportional to the atomic weight. For a series of elements ranging from copper to gold they found a systematic variation of this value from 3.82 to 3.25. In November, 1913, Van der Broek showed that if the number giving the place of element in the periodic table were used instead of the atomic weight, the results of Geiger and Marsden gave a real constant. This suggestion is in line with Rutherford's earlier idea since the "atomic number" is roughly half the atomic weight.

The papers mentioned in the preceding paragraphs have furnished the ideas from which a more or less tentatively accepted theory of atomic structure has been evolved. Naturally many of the contributions have been somewhat controversial in character. In particular, Nicholson and Lindmann have criticised certain features of Bohr's theory and the interpretation of some of Moseley's experimental results in terms of this theory. It is entirely beyond the scope of the present article to review all the phases of this discussion, and to give proper credit to each contributor is well nigh impossible. Without attempting either of these tasks, the theory as it stands at the end of 1914 will be outlined.

If the elements are written down in the order of ascending atomic weight, as is done in the "Periodic Table," we assign to each element a number giving its position in this list. Hydrogen is No. 1, helium, No. 2, etc. For shortness, this number is referred to as the "atomic number" of the element. The nuclear charge of an atom is supposed to be made up of positive charges (+e) and electrons (—e), the sum of the positive charges exceeding the sum of the negative charges by an amount just equal to the atomic number. That is, the atomic number signifies the excess of the positive charges over the negative charges in the nucleus. Since the atom is electrically neutral, the nucleus must be surrounded by a number of electrons equal to the atomic number. Among other properties, the chemical valency of the atom is determined by the stability with which these outer electrons are bound to the nucleus. "On this theory the excess positive charge (the algebraic sum of the charges) on the nucleus is the *fundamental* constant which determines the properties of the atom." This nuclear charge increases by one as we go from element to element. "The atomic weight, while it follows approximately the order of the nucleus charge, is probably a complicated function of it, depending on the detailed structure of the nucleus." This is practically Rutherford's theory of 1911 with the addition of the idea of "atomic number," and the interpretation of this atomic number in terms of the nuclear charge. It is interesting to note that though Bohr's atomic model has been attacked, Van der Broek's suggestion seems to have been almost universally accepted.

Since the α particle carries two units of positive electricity while the β particle carries one unit of negative electricity, if the positive nucleus is the source both of α and β particles the emission of an α particle diminishes the nuclear charge by two, while the emission of a β particle increases it by one. Hence, in the case of radioactive transformations, any change accompanied by the loss of a single α particle must give a product whose atomic number is two less than that of the parent substance. Also, any transformation accompanied by the emission of a single β particle must result in a product whose atomic number is one higher than that of the parent. Thus, the successive expulsion of two β particles and one α particle in three radioactive transformations in any order would result in a product of the same "atomic number" as that of the parent. Rutherford and Soddy have called attention to radioactive transformations which must take place in just this way. To quote from Rutherford: "It is clear on the nucleus theory that the physical and chemical properties of the ordinary elements are for the most part dependent entirely on the charge of the nucleus, for the latter determines the number and distribution of the electrons upon which the chemical and physical properties must mainly depend. As Bohr has pointed out, the properties of gravitation and radioactivity, which are entirely uninfluenced by chemical or physical agencies, must be ascribed mainly, if not entirely, to the nucleus, while the ordinary physical and chemical properties are determined by the number and distribution of the external electrons. On this view, the nucleus charge is a fundamental constant of the atom, while the atomic mass of an atom may be a complicated function of the arrangement of the units which make up the nucleus. . . . If the nucleus is supposed to be composed of a mixture of hydrogen nuclei with one charge, and of helium nuclei with two charges, it is a priori conceivable that a number of atoms may exist with the same nucleus charge but of different masses. The radioactive evidence certainly supports such a view, but probably only a few such possible atoms would be stable enough to survive for a measurable time." (*Philosophical Magazine*, vol. xxvii, pp. 497–498.) Also in harmony with this view are the results obtained by Richards and Lembert on the atomic weight of lead from radioactive sources. They found that the atomic weight of such specimens was sometimes as much as 0.75 of a unit lower than that of "ordinary" lead.

Rutherford further argues that the nucleus rather than the outer rings is the source of β as well as α particles since (1) the β like the α ray transformations are uninfluenced by external chemical or physical conditions and (2) the energy of the β ray and γ ray transformations is much greater than we would expect to be stored in the external electronic system. The considerable fraction of β rays which come from the external electrons are primarily due to the disturbance produced in these configurations when a β particle from the nucleus passes through them. In a later paper by Rutherford and Andrade it is shown that the soft γ rays from Radium B have the same spectrum as the "characteristic X-radiation" of the "L" type of lead. On the theory of the nucleus atom it was calculated that lead and radium B should have the same atomic number, though the structure of the two nuclei are not identical, and their atomic weights are 207 and 214 respectively. The identity of their X and γ ray spectra is wonderfully conclusive evidence in favor of this whole theory.

The work of Moseley on the High Frequency spectra of the elements has furnished other very strong arguments in favor of the idea of the atomic number. He determined the characteristic X-ray spectrum for a number of elements ranging in atomic weight from aluminum (27) to silver (108). Each of these spectra consisted of two sharp lines and from these he determined the frequency of the characteristic radiation. While plotting atomic weight against the square root of frequency did not give a satisfactory result, he obtained an accurately straight line when *atomic number* was plotted against the square root of the frequency. To obtain this result, however, it was necessary to assign to cobalt (atomic weight 59) an atomic number one *less* than that of nickel (atomic weight 58.7), making the order cobalt, nickel, copper, instead of nickel, cobalt, copper. But both its chemical properties and its behavior in experiments on radioactivity indicate that nickel should be placed between cobalt and copper in the periodic table.

In such an alluring subject as this, the temptation to let one's imagination run riot is very strong at times. However, in Rutherford's article quoted above (*Phil. Mag.*, vol. xxvii, pp. 488–498, March, 1914), Darwin's article which immediately follows it, and the later paper of Rutherford and Andrade (*Phil. Mag.*, vol. xxvii, pp. 854–868, May, 1914), the lines are sharply drawn between what has been actually established and what is still in the domain of conjecture. Undoubtedly the next few years will see long strides toward the final solution of this fundamental problem of both physics and chemistry.

X-Rays and Crystals. As already indicated, the connection between the work on theories of the atom and the investigations on X-rays and crystals is very close. The 1913 Year Book contains a rather detailed account of the earlier work in this line. During 1914 many investigators worked in this fascinating field and the amount of data accumulated was surprising. A paper by Bragg (*Science*, Dec. 4, 1914) gave an excellent résumé of the whole field from the original investigations of Laue and his associates to the middle of the current year. One of the most prolific of the contributors was M. de Broglie. By various devices he succeeded in producing several effects which were exact analogues of well known phenomena in optics. He devised a method by which the reflecting crystal was slowly rotated about a vertical axis, the reflected rays falling on a photographic plate. In this way a continuous record across the plate was obtained. This is crossed at certain points by dark bands, giving much the appearance of the photograph of an ordinary line spectrum. This spectrum he found to be characteristic of the element used as antikathode. By allowing the reflected beam to fall upon a second crystal, de Broglie and Jacot showed that the beam of X-rays after the second reflection is polarized in a manner analogous to the polarization of ordinary light by reflection. De Broglie and Lindemann found that by substituting a very sensitive fluorescent screen for the photographic plate, they were able to *observe* these spectra. By using an absorbing screen of platinum with rays from a platinum antikathode, an effect similar to the "reversal" of spectrum lines was observed. The results of de Broglie's experiments with copper and iron antikathodes are in good agreement with those observed by Moseley.

One of the most striking of de Broglie's experiments was made by studying the *secondary* X-rays given off when a beam of primary rays falls on any substance. As was to be expected, the spectrum of the secondary rays was found to be characteristic of the material from which they originated. Thus, if pieces of several metals were put into a bag, it was possible by studying the spectra of the secondary rays from it to determine its contents. This suggests many possibilities in the way of delicate and accurate analysis of mixtures of substances.

Some of the most important work in this field was done by Darwin and Moseley. Darwin's papers (*Phil. Mag.*, vol. xxvii, pp. 315–333, February, 1914, and pp. 675–690, April, 1914) give a theoretical treatment of the problem of Roentgen Ray reflection by crystals and he compares his tentative conclusions with the experimental results obtained by W. H. and W. L. Bragg, Moseley, and others. While the theory was by no means complete, it was at least very suggestive as a guide for future work.

Reference has already been made to the work of Moseley. His two papers on "High Frequency Spectra of the Elements" (*Phil. Mag.*, vol. xxvi, pp. 1024–1034, December, 1913, and vol. xxvii, pp. 703–713, April, 1914), were extremely important for their bearing both on the theory of atomic structure and on the nature of the action between X-rays and crystals. The experimental details of these investigations are too involved to be described in this review. An idea of the comprehensiveness of the work may be gathered from the statement that the characteristic radiations of either the "K" or the "L" type, were studied for more than 30 elements, while for a few of these it was found possible to study both types. To quote a part of the summary of his second paper (page 713):

"1. Every element from aluminium to gold is characterized by an integer N which determines its X-ray spectrum. Every detail in the spectrum of an element can therefore be predicted from the spectra of its neighbors.

"2. This integer N, the atomic number of the element, is identified with the number of positive units of electricity contained in the atomic nucleus.

"3. The atomic numbers for all elements from aluminium to gold have been tabulated on the assumption that N for aluminium is 13.

"4. The order of the atomic numbers is the same as that of the atomic weights, except where the latter disagrees with the order of the chemical properties.

"5. Known elements correspond with all the numbers between 13 and 79, except three. There are here three possible elements undiscovered."

Comment on the importance of these conclusions, especially the latter part of number 5, is superfluous.

As indicated in the 1913 YEAR BOOK, two of the leaders in this line of work were Professor W. H. Bragg and his son, W. L. Bragg. Their later work was largely along the lines previously outlined in the review for 1913. By perfecting and especially by improving the precision of the X-ray spectrometer, they have been able to attack more complicated problems. For example, such crystals as quartz and sulphur were studied. Some idea of the complexity of these may be gained from the statement that the crystals of ordinary orthorhombic sulphur are made up of *eight* interpenetrating lattices. In the study of the diamond by rays from a rhodium antikathode, an effect similar to selective absorption was observed.

Since increase of temperature means an increase of molecular and atomic motion, and as this must disturb somewhat the arrangement in the "planes rich in atoms," it is to be expected that a rise in temperature of the crystal would influence the pattern or spectrum produced by it. Attention was first called to this point by Debye. He showed theoretically that the intensity of the interference spots in a Laue photograph should decrease with increase of temperature and that the effect should increase in going to spectra of higher orders. These conclusions were confirmed in a general way by experiments by Bragg, Laue, and Van der Linzen, and others. These investigations were especially interesting because of the insight which they promised to give into the nature of the thermal agitation of molecules and atoms in solids. The work of Bragg on the structure of crystals was confirmed by investigations by Ewald, using photographs made by Laue's method. Born worked out in detail a mathematical theory which fits in well with Bragg's results.

It would be expected that changes affecting the orientation of the atoms and molecules of a substance would produce changes in its X-ray spectrum. Haga and Jaeger have used photographs, made by Laue's method, to investigate the nature and arrangement of the crystals of boracite at temperatures above and below its inversion point. The investigation is of considerable interest because the optical behavior of boracite at ordinary temperatures is anomalous. When, however, a crystal of it is heated to its inversion point, about 300°C., a rearrangement of the molecules occurs by which the optical behavior becomes just what we would expect from its external form. The photographs gave direct evidence of this molecular rearrangement. Of a somewhat similar nature are some experiments of Owen and Blake on copper. They carefully annealed one-half of a lump of copper, and studied the photographs obtained by transmitting a beam of X-rays through each half. The annealed half showed the Laue spots though the patterns were not symmetrical, showing that the minute crystals were not arranged regularly. The unannealed portion gave negative results. Such investigations as these may prove of value in metallurgical work. An attempt by Forman to detect a change in the opacity of iron to X-rays due to magnetization gave negative results although his method was very sensitive.

The phenomena of the scattering of X-rays by metals has been studied for several years. H. A. Wilson has recently suggested an explanation on the assumption that there are very small crystals distributed throughout the metal. By assuming that half of the electrons are in these crystals and half of them scattered at random throughout the metal, his calculated results are brought into fair agreement with the values obtained experimentally by Crowther for aluminium.

The investigations mentioned above are only a part of the work which was done in this field. In a recent lecture Professor Bragg described the value of this method of studying the nature of X-rays by saying ". . . we are in the same position as we should have been in respect to light if our only means of analyzing light had been by the use of colored glasses, and we had then been presented with a spectrometer, or some other means of measuring wave length exactly." Yet this is only one of the lines of study to which these results apply and he would be bold indeed who would venture to predict the goals to which they may lead in the next few years.

THERMIONS, CONDUCTION, AND IONIZATION IN GASES, AND PHOTOELECTRIC EFFECT. As mentioned in previous YEAR BOOKS, Richardson's general theory of thermionic emission has been attacked by Pring, Parker, and others. Pring in particular held that his latest experiments showed that practically all the thermionic current from heated carbon is in reality due to chemical action between the hot carbon and the residual gas. Richardson replied by pointing out that if this were true it would follow that the results with carbon dioxide as the residual gas would be of a very different order of magnitude from those observed with other gases. The experimental results do not support this. In the case of Pring's experiments, the heating current was large—approximately 80 amperes. Richardson has shown that the magnetic effect of this current would produce sufficient deflection to keep any of the electrons emitted by the carbon from reaching the collecting electrode. Richardson is also supported by the work of Dushman in the Research Laboratory of the General Electric Company. This confirms Langmuir's conclusions (see 1913 YEAR BOOK), on the effects of space charge and residual gases. Dushman's experiments show that there is a pure electron emission from heated metals which is not due to the presence of gases and that this is a function of the temperature only.

The subject of ionization by collision has received considerable attention during the past year. The work of Franck and Hertz was mentioned in this review last year. The currents due to ionization by collision are greater in helium than in hydrogen, though the minimum energy which an electron must possess in order to ionize a molecule of hydrogen corresponds to that gained on falling through only 11 volts while for helium it corresponds to 20.5 volts. Franck and Hertz explain this by assuming that the collisions between electrons and molecules are elastic in the case of helium but inelastic in the case of hydrogen. In the case of mercury vapor they have shown that the collisions are elastic up to a critical velocity of the electrons corresponding to a fall of potential through 4.9 volts. This corresponds to the energy quantum of the line $\lambda = 2536$ in the resonance spectrum of mercury. This indicates that the collisions are elastic until the kinetic energy of the electron reaches the amount of the energy quantum. Then at a subsequent collision this quantum is transferred, part of it producing ionization and part of it producing light of the wave length just mentioned.

Bergen Davis has published several papers dealing with the general theory of ionization by collision. His theory considers the possibility of both elastic and inelastic collisions. It is too mathematical to be outlined here, but in general it may be said that his theoretical deductions are in excellent agreement with the accepted experimental results.

As mentioned in an earlier topic, Rutherford some years ago suggested a theory to explain the scattering of α and β particles. In this theory he assumed that the atom was so large and heavy in comparison with the colliding particle that it was almost unaffected by its collision. While this is true in many instances, it obviously is not the case when an α particle collides with an atom of hydrogen or helium. A general theory to cover all possible cases has been given by Darwin in a recent paper (*Phil. Mag.*, vol. xxvii, pp. 499–506, March, 1914), and Marsden's experiments on hydrogen gave results confirming the deductions from this theory. (See *Phil. Mag.*, vol. xxvii, pp. 824–830, May, 1914). For example, Darwin's theory indicates that in the case of an "end on" collision between an α particle and an hydrogen atom, the hydrogen particle should have a range about four times that of the α particle. Marsden found some hydrogen particles which traveled at least three and a half times as far as the α particles. And the number of these was in fair agreement with the value computed on Darwin's theory.

In the 1912 YEAR BOOK, mention was made of Wood's suggestion of an "electron atmosphere" around a metal. While the idea certainly is attractive, later experiments have failed to lend it any support. It will be recalled that Wood's suggestion was based on experiments indicating conduction between metallic surfaces separated by 20 or 30 wave lengths of sodium light. F. C. Brown, from some experiments with condenser plates, separated by only 10 wave lengths, concluded that conduction did not extend as much as two wave lengths beyond the mechanical surface. In a published note, Englund called attention to some of his earlier experiments in which he found that the spark potentials between electrodes separated by distances as small as half a wave length of sodium light were constant. These results are strong evidence against the existence of an electron atmosphere.

In working with the ultra-microscope and colloidal solutions of the precious metals, Ehrenhaft has claimed to find evidence of electric charges smaller than the charge of an electron. The existence of such "sub-electrons" is certainly not contemplated by most of our present theories. It will be interesting to see whether Ehrenhaft's deductions are confirmed by future work.

Recent studies of photoelectric phenomena divide themselves into two classes, those the subject of which is to discover the exact nature of the phenomena, and those which are directed toward perfecting a cell which can be used in very delicate photometric work. In the latter class may be mentioned the work of W. F. Schulz in applying the photo-electric cell to a study of the intensities of certain stars.

The work of Fredenhagen and Kustner indicates that the photo-electric effect is primarily due to the presence of gas with which the metal reacts. Their experiments with fresh surfaces of zinc prepared in the highest vacua show less than 1/1000 the "normal" effect. Wiedmann and Hallwachs explain the exceptional activity of potassium as due to the large amount of gas which it absorbs. On the other hand, Hallermann concluded from his researches that temperature has no influence on the photoelectric effect, while later experiments by Fredenhagen showed that a potassium cell is or is not influenced by temperature, according to its previous treatment. With such conflicting claims it is clear that there is much room for further investigation in this field.

Wood, Dunoyer, and others have continued the study of resonance spectra, mentioned in some detail in the YEAR BOOKS of 1911 and 1912. These investigations included a photometric study of the fluorescence in iodine vapor and considerable work on sodium vapor. Among other interesting results was the discovery that the resonance lines in sodium vapor are about four times as narrow as the exciting lines, and that each of the two components of the sodium spectra excites only its own frequency in the resonance spectra.

WORK AT VERY LOW TEMPERATURES. For a number of years Kamerlingh Onnes and his associates had been using the facilities of the low temperature laboratory at Leyden for investigations along several different lines. The YEAR BOOKS of 1911 and 1912 contained brief accounts of some of these. More recent investigations included the study of the vapor pressure of carbon dioxide down to a temperature of —183°C. The results were found to be in substantial agreement with those deduced from Nernst's formula. With the assistance of Madame Curie, some experiments were carried out upon radium. It was found that keeping radium at the temperature of liquid hydrogen (—253° C.) for an hour and a half did not cause a change in the γ radiation of as much as one part in 1000. Since temperature deals essentially with molecules while radioactivity is ascribed to the atomic nucleus, this result was to be expected. In some investigations on the magnetic susceptibility of solid oxygen it was observed that the solid oxygen exists in two forms. Above —235° C. it is blue-gray in color, but below this temperature it has a transparent and vitreous appearance. The magnetic susceptibility, which follows Curie's Law at higher temperatures, departs widely from this law at such low temperatures.

Perhaps the most fascinating of these low temperature researches are those dealing with the effects on electrical resistance of metals. In the case of solid mercury it was found that resistance follows the ordinary laws of change with temperature down to about 4.2° Absolute (—268.8° C.). But here a very sudden change occurs. Between 4.21° A. and 4.19° A. the resistance decreases enormously and the metal becomes "superconductive." At 3.6° A. the resistance is less than four *ten million-millionths* (4×10^{-10}) of its resistance at 0° C., and at 2.45° A. the resistance is less than half this amount. An applied potential difference of 0.56 *microvolt* gave a *current density* of 1024 *amperes per sq. mm.* This enormous value is almost inconceivable. Lead and tin showed similar changes in resistance. With tin the superconducting state was reached at about 3.8° A., while in the case of lead it occurred between 14° A. and 4.3° A. One experiment with a lead coil was very remarkable. By means of a powerful magnet, a current was induced in a coil of lead in the superconductive state. This current continued apparently without diminution for *over four hours*. It was found that a magnetic field with the lines of force in the plane of the coils increased the resistance, acting like an increase of temperature. The next step which Kamerlingh Onnes makes in the attainment of his goal, the "absolute zero," will be awaited with great interest.

PICQUART, MARIE-GEORGES. A French soldier and public official, died Jan. 19, 1914. He was born in Strassburg, Sept. 6, 1854, and received his education at the Military Academy at Saint Cyr, and in the Staff High School. He first served in Algeria, and later in Tongkins under the staff of General de Courcy. At the age of 33 he was a major and a chevalier of the Legion of Honor, and in 1888 he was appointed instructor in the Higher School of War. One of his pupils here was Major Dreyfus, in whose later career he became so closely identified. When the Dreyfus trial began in 1894, General Mercier, then Minister of War, chose Picquart to represent him in the secret sessions and to carry to the court the "secret dossier" which was such a notorious feature of that trial. After Dreyfus had been convicted and sent to Devil's Island, Picquart, then made a general, was a member of the general staff of the army. Coming across several documents which had been used in finding Dreyfus guilty, he became convinced that these were forgeries, and immediately took up the cause of Dreyfus, fighting for a reversal of the judgment against the convicted officer. When it became evident to the faction of the army opposed to Dreyfus that Picquart was determined to have the case threshed out, they caused his arrest first on one charge and then on another; these charges, however, were dismissed. General Picquart was abused in the press; forced into a duel with Colonel Henry, one of the chief opposers of Dreyfus and at that time a popular favorite; and finally obliged to resign from the army. During this period of retirement and official disgrace, he was able, with the help of Emile Zola, the novelist, and others, to have the Dreyfus case reviewed by a second court-martial at Rennes; which resulted in Dreyfus being again convicted by his enemies, but pardoned by President Loubet. Picquart, not being satisfied with the pardon, insisted upon a vindication of Dreyfus, and he and his associates kept up the fight until they had obtained a verdict of innocence from the highest court, and Dreyfus was restored to the army.

When M. Clémenceau, one of the most determined of the Dreyfus supporters, became Premier, he restored General Picquart to his rank in the army and made him Minister of War. Although he now possessed the power to punish those who had persecuted him, he showed himself just and magnanimous. As Minister of War he encountered strong opposition because of his support of the policy of lightening the war burden. General Hagron, commander-in-chief of the army, resigned because of this policy and insisted that Picquart should have called attention to the national dangers arising from this policy when Germany's superior war strength was considered. General Picquart resigned when the Clémenceau ministry fell in 1909, and from that time took no active part in the government. Opinion was divided as to Picquart's success as Minister of War; government organs insisted that he was the best war chief that France ever had, while the opposition papers declared that his administration was a failure. He wrote in 1908 *Projet de loi* *relatif à la constitution des cadres et des effectifs des armées active et territoriale.*

PIERCE, Arthur Henry. An American psychologist and educator, died Feb. 20, 1914. He was born at Westboro, Mass., in 1867, and graduated from Amherst College in 1888, taking post-graduate studies at Harvard University, Berlin, Strassburg, and Paris. In 1900 he became professor of psychology at Smith College and retained that chair until his death. He was the editor of the *Psychological Bulletin*, the author of *Studies in Space Perception* (1901), and was a member of several psychological associations.

PIETRO, Angelo di. A Roman Catholic Cardinal, died Dec. 5, 1914. He was born in Vinaro, Italy, in 1828, and was educated at the Seminary of Tivoli, also graduating in law at Rome. For a time he served as secretary and vicar to the Bishop of Velietri, and in 1877 was chosen Archbishop of Niuiauzo and Apostolic Delegate to Argentina, Uruguay, and Paraguay. He then became Papal Nuncio at Munich and in 1887 was transferred to Madrid. In 1893 he was created a Cardinal priest and was designated Archbishop of Vienna.

PIG IRON. See Iron and Steel.

PITCHBLENDE. See Radium.

PITTSBURGH, University of. An institution for higher education, founded at Pittsburgh, Pa., in 1787. The university has shown great increase in enrollment in recent years. There were in all departments in 1914, 2830 students, and the faculty numbered 329. The productive funds amount to about $525,000, and the annual income to about $500,000. The library contains about 20,000 volumes. The chancellor is Samuel B. McCormick.

PITUITARY GLAND. This structure, located at the base of the skull, was the subject of active investigation during 1914. The body is a neuroglandular mass, which in the higher animals consists of two principal parts, an anterior or glandular lobe, and a posterior lobe containing mainly nerve tissue. The posterior lobe is smaller than the anterior and is surrounded by an epithelial covering, the so-called *pars intermedia*, separating it from the anterior lobe. While the functions of the pituitary body are not fully known, certain facts have been discovered with regard to it which indicate that it has a profound influence on the growth and well-being of the body. In fact its existence is necessary to life. The extract of the gland when injected causes a rise in the blood-pressure and a contraction of the involuntary muscles. For these reasons it has been used to stimulate the uterus in delayed labor, in paralytic distention of the bowel, and in shock. Recently it has been advocated in exophthalmic goitre. Interesting observations along the lines of comparative physiology were made by Cushing and Goetsch, who called attention to the striking resemblance between the phenomena of hibernation in animals like the woodchuck with the train of symptoms which attends deficient activity of the pituitary body. In the human subject the most noticeable symptoms of "hypopituitarism" are a lowering of the body temperature, slowing of the pulse and respiration, fall in blood-pressure and somnolence, and a tendency in the chronic cases toward the deposition of fat. The investigators observed that in the dormant period of a series of hibernating animals the pituitary gland not only becomes smaller, but undergoes extreme histologic alterations, more especially in the cells in the anterior lobe. At the end of the dormant period the gland again enlarges, and the cells resume their characteristic appearance. Cushing and Goetsch also discovered that the administration of pituitary extract has a stimulating effect on the growth and development of the reproducing glands in young animals of both sexes. Extracts of the anterior lobe only have this effect. See Epilepsy.

PIUS X (Giuseppe Melchiore Sarto), Pope. Died Aug. 20, 1914. He was born June 2, 1835, in the small hamlet of Riese, in the province and diocese of Treviso, Venice. His mother, Margarita Sanson, kept a small village shop, and his father, Giovanni Batista, was a postman and the son of a soldier, a zouave in the Pope's army. It is a tradition among the Italian peasantry that the sons or the grandsons of one of the Pope's soldiers should contribute at least one to the priesthood, and Margarita Sanson vowed her firstborn son to holy orders. During the childhood of the boy Venice was in the hands of the Austrians, and conditions were so hard in the communities that the schools were of little value. Giuseppe was taught by the parish priest the elements of Latin, and he was then sent to pursue his studies further in the neighboring and larger town of Castelfranco Veneto. Here he showed such diligence and application to his studies, that when a small scholarship of the diocese of Treviso became vacant, it was given to him. With this help, which was in reality a mere pittance, he went to the University of Padua, which for centuries was the centre of Italian culture. There he carried on his classical, philosophical, and theological studies. His companions at the university agreed, that while his study never rose to brilliancy, he was always firmly grounded upon accurate knowledge and sound logic.

Sarto was ordained priest Dec. 15, 1858, and was assigned at once as curate at Tombolo, but he had in reality charge of the parish, for the rector was aged and infirm. He held this post for nine difficult years, and in carrying out his duties there he acquired experience which proved in good stead in the future. In 1867 he was assigned as archpriest to Salzano where he spent eight years. In the face of the greatest difficulties he succeeded in restoring a dilapidated parish church, in bettering its schools, and in enlarging and endowing a hospital. Here began his association with the Society of St. Vincent de Paul, whose work was always close to his affection and care. During his stay at Salzano the cholera swept over Italy and his parish did not escape the visitation, but he remained at his post and was fearless in his duty. His service in this parish attracted the attention of the Bishop of Treviso, and, in 1875, Sarto was raised to a canonry in the Cathedral of Treviso; not a mere honorary post, but one imposing hard administrative work. He was at the same time rector of the diocesan seminary, examiner of the clergy, and vicar-general of the diocese. His work was so successful that three years later, on the death of the bishop, he was unanimously elected by the chapter as its vicar-capitular. Six years later, on Nov. 10, 1884, he was consecrated Bishop of Mantua, a stormy diocese, the turbulent centre of socialism, liberalism, and agnosticism. In the course of years of hard work, however, Bishop Sarto succeeded in winning Mantua, and in so doing, two things in particular developed for him: from the necessity of the conditions with which he found himself surrounded, he was obliged to investigate the appeal which Socialism in its various forms possesses for the people; and to study the causes which left the parochial clergy weak to resist in themselves and to combat in others the social disorders. These topics he mastered in all their phases. He was able to cope with them in the diocese and he healed much of the derangement of the conditions of the community and of the church. So closely did he become identified with Mantua that, when he was elevated to the position of Patriarch of Venice he was continued by title and office as Apostolic Administrator of Mantua. As at Treviso, so at Mantua he served for nine years.

In recognition of his remarkable work at Mantua, he was created by Pope Leo, Cardinal Titular of San Bernardo alle Terme, and preconized Metropolitan and Patriarch of Venice, on June 15, 1893. The see of St. Mark the Evangelist of Venice is one of the oldest in Christendom, and has an uninterrupted history of nearly sixteen centuries, but in modern times the style of its Metropolitan is hardly more than an empty honor; yet it serves as a reminder of earlier ecclesiastical government in which the Pope, as patriarch of Rome, was but the primate of a small group of associated patriarchs. Sarto did not assume the patriarchate of Venice until 1894 on account of the refusal of the Italian government to grant the official exequatur. This situation brought about a certain hostility toward the newly appointed patriarch, but his charm of manner soon succeeded in smoothing out the asperities of a trying situation, and the Metropolitan and the city officials became warm friends. For nine years they worked together for the betterment of the city.

In 1903 Leo XIII died, and the Conclave to choose his successor held its first session on August 1 of that year. After four days' voting, in the morning poll of August 4, Cardinal Sarto received fifty-five votes out of a possible fifty-nine in the Conclave, and was elected Pope, the two hundred and fifty-ninth successor of Saint Peter. As his title he chose the name Pius X, and was crowned on Aug. 9, 1903; taking as his motto *Instaurare omnia in Christo* ('to renew all things in Christ'). He began almost immediately many wise reforms and important measures that his admirers consider will rank him among the Church's great popes. He began by abolishing the traditional right of veto at the election of the Pope which several European governments claimed and which Austria had exercised against Cardinal Rampolla at the time of his own accession. On November 22 of the same year, he issued the *Motu Proprio* reforming the music of the ritual and restricting it to the authentic Gregorian chant of which he had made a special study during his administration of the bishopric of Mantua. The decree insisting on early communion for children and frequent, even daily, communion for all, was one of the most radical and far-reaching of his efforts to restore the Church to the fervor of the primitive times. In 1904 he established a commission whose duty it should be to codify the canon laws, and another commission to reform the Breviary. He also created a Biblical Institute, which he entrusted to the Jesuits and called on the Benedictines to restore the true text of the Vulgate of St. Jerome. These projects were but initial in his greater plan for the clearing away of the accretion of ill usage and the restoration of sound doctrine in the Church. As the first step toward the treatment of this problem he attacked the methods of diocesan seminaries and insisted that each diocese should support its seminary for the priesthood; but with the proviso that weak dioceses should not assume to maintain seminaries which must essentially be weak, but must join themselves to their more flourishing neighbors. Thus he provided that the means of education should be strong or should not exist at all. This cleared the way for the decree *Lamentabile*, issued in 1907. This at once received the popular designation of the "Syllabus of Pius X," in which sixty-five propositions were condemned, that being the number of errors which he declared were rife in the instruction of candidates for holy orders. On September 8 of the same year this decree was followed by the great encyclical *Pascendi*, in which Modernism, then assuming important proportions in the Church, was reproved. As a result of this and succeeding decrees the open advocacy of Modernism was practically brought to an end.

In Italy the years of the reign of Pius X were filled with efforts to cope with the spread of Socialism, but the Socialism of Italy soon became obscured in the greater troubles of the Church in France. He was confronted in 1906 by the Separation Laws passed there, and by the abolition of the Concordat. Some of the French bishops favored a compromise to *associations canoniques* that would meet the requirements of the new law, but Pius X refused to sanction the plan. He refused to fetter the Church with the chains of the *loi Briand*, and the complete sacrifice of the property of the Church in France that this policy involved seemed to his critics an insane one. Before his death the revival there of the religious spirit made him and his followers sure that it had really benefited religion and saved the independence of the Church from destruction. The material losses in France were followed by the drastic legislation and the spoliation of Church property by the new Republic of Portugal.

Pius X's relations with the United States were particularly friendly and cordial. During the reigns of his predecessors, the United States remained under the missionary jurisdiction of the propaganda. Pius X raised it to the autonomous position of the other great nations, and this step was followed by the creation in 1911, of two additional American cardinals.

The last great administrative act of Pius X was the consistory held on Mav 25, 1914, when he created thirteen new cardinals and brought the number of the Sacred College to 66, of whom half were Italians.

It is probable that the outbreak of war in Europe hastened his death, for although he had been in ill health for several months, no alarm was felt until war had been declared. His last message to the world was an appeal for peace made on August 19.

While there may be a difference of opinion as to the ability with which Pius X administered his office, there can be none as to the beauty and purity of his life. He died a poor man and so loath was he to accept honors for members of his family, that although he might have raised them to positions of great dignity, his brother continued to act as postman in the small village in which he had been born, and his three sisters remained in humble circumstances in Rome.

PLAGUE. An outbreak of plague in New Orleans took place in June, 1914. The first case was noted on June 27, and the epidemic lasted until August. Altogether some 22 cases were found. Immediately on discovery of the first case an active campaign against rats was undertaken with the result that numerous animals were found to harbor the germs of the plague. The destruction of rats, together with rigorous sanitary measures, prevented the spread of the disease. (See VITAL STATISTICS.) It appears that other animals besides rodents may act as carriers of bubonic plague. Klodnitzky reports that camels are not immune, but are probably the chief cause of epidemics among the Kirghiz tribes in the southeastern part of Russia. Camel's meat is eaten by these people, sick animals being slaughtered for human consumption. The skins also are used for various purposes, and help to spread the disease. In 1911 and 1913 plague occurred mostly in the form of the winter pulmonic type, and this the author explains by the fact that camels are butchered early in the winter in great numbers. Marmots, which were implicated by several observers in the Manchurian outbreak several years ago, could not be responsible in this locality, for they burrow underground, at the end of July, to stay for the winter. The question of human carriers was also raised by the case of a young man in Tripoli, who was kept under surveillance because he had been living with another who had developed the cutaneous form of the disease. The first young man was apparently healthy, but puncture of an enlarged lymph-node in the groin revealed the presence of the *Bacillus pestis*. He was evidently a healthy bacillus-carrier, and the local infection in his case probably acted as a vaccine, rendering him immune. Such cases are liable to occur in any epidemic. See INSECTS AND THE PROPAGATION OF DISEASE; VITAL STATISTICS.

PLANÇON, POL HENRI. A French operatic basso, died Aug. 12, 1914. He was born at Fumay, in the Ardennes, in 1854, and was educated in music at the Ecole Duprez in Paris. He made his début in *Les Huguenots* at Lyons in 1881; spent one season at the opera house of Monte Carlo; and appeared in 1883 in the Paris Opéra as Mephisto in *Faust*, a rôle in which he achieved great success. He sang for 10 years in Paris; appeared 15 consecutive seasons at Covent Garden in London; and was engaged each winter for 13 years at the Metropolitan Opera House of New York City. The rôle of Ramfis in Verdi's *Aïda* was one of his most brilliant successes. He created the rôles of Norfolk in *Henry VIII*, of Don Gormas in *Le Cid*, and of Francis I in *Ascanion*. He took part in the revival of Gounod's *Sapho* in 1893, and appeared in leading rôles in *Hamlet*, *Le prophète*, *La favorite*, and *Lohengrin*. Plançon was for 10 years the favorite singer of Queen Victoria, from whom he received many presents.

PLANETS. See ASTRONOMY.

PLANT BREEDING. See BOTANY; HORTICULTURE.

PLATINUM. There was little increase in the production of crude platinum in the United States in 1913. The entire production was from California and Oregon, and amounted to 482.87 crude ounces, valued at $18,477. Of this, 460.37 crude ounces came from California, and were rated at 80 per cent fine. The greater part of the California platinum came from the large gold-dredging operations in Butte, Yuba, Sacramento, and Calaveras Counties. A considerable output of platinum is annually made in the United States from the refining of gold and copper bullion. A portion of this originates from old scrap, sweepings, etc., sold by jewelers and dentists. About 650 fine ounces, however, were derived in 1913 as new metal from gold and copper bullion from domestic mines. The crude platinum sand imported into the United States in 1913 amounted to 48,942 ounces. If the content of fine platinum in this sand is assumed to be 80 per cent, the approximate production of refined platinum in the United States in domestic refineries from foreign sands in 1913 was 39,154 ounces. The total importation of ore or crude platinum into the United States in 1913 was 48,942 troy ounces, and of unmanufactured platinum 69,551 troy ounces, with a total value of $5,040,210. The larger part of the world's supply of platinum comes from Russia, the estimated production of that country in 1913 being 250,000 troy ounces. A considerable quantity is obtained from Colombia, and smaller quantities from New South Wales and Tasmania. The Russian production has in recent years shown signs of exhaustion, but in 1913 new deposits were discovered in the northern part of the Ural region. Metals allied with platinum are iridium, palladium, and osmium. Practically the only use for osmium is for pen points. Palladium is also used as an alloy of platinum for ornamental purposes. See also the article CHEMISTRY, INDUSTRIAL.

POETRY. See FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; LITERATURE, ENGLISH AND AMERICAN; SCANDINAVIAN LITERATURE; and SPANISH LITERATURE.

POINCARÉ, PRESIDENT OF FRANCE. See FRANCE, *History, passim;* and WAR OF THE NATIONS.

POLAND. See RUSSIA.

POLAR RESEARCH. ANTARCTIC. South-polar exploration has been largely in the way of correlation and preparation, with which the great European conflict has seriously interfered. The Argentine government has apparently placed its meteorological work in the South Orkneys on a permanent footing. The growing productivity of the fishing industries, of which South Shetlands is the main base, is shown by the report that they approximated $1,000,000 in value last year. In this connection appears the importance of territorial rights, exemplified by Great Britain, calling attention to its declaration of 1908 that Graham (Palmer) Land was a British possession, extending "to the south of the 50th parallel of south latitude, and lying between 20 and 80 degrees of west longitude." Arrangements have been made to scientifically explore Graham Land by an Anglo-Swedish expedition under the leadership of Otto Nordenskiöld, at a cost of about $40,000. The work is to cover five years, and involves the establishment of a permanent biological observatory on or near Joinville Island. From this centre research and exploration will be pursued both by land and by sea. Among other problems are those connected with the past history of Graham (Palmer) Land, and its continuity southward as an integral part of the continent of Antarctica.

An Austrian Antarctic expedition was planned for 1914, under command of Dr. König, which was to sail from Trieste. König planned to occupy as a base a bay discovered in the ice-barrier of Prince Luitpold Land by Filchner. Thence three sledge parties, traveling in different directions, were to explore the adjacent regions. The beginning of war caused the postponement of the expedition.

The only south-polar expedition to take the field during 1914 was the Imperial Transantarctic, under Shackleton, which proposed to cross the continent of Antartica from Weddell Sea to Ross Sea. It involved a minimum travel of 1700 statute miles, and a sledge trip of five months. The problems to be solved were the continuity of Antarctica from Ross to Weddell Sea, and the collection of such specimens as might complete the geological history of the continent. While the selected route from Weddell Sea was direct to the Pole, the return to Ross Sea would probably be east of Amundsen route, possibly to Edward VII Land, so that the country visited would be entirely new. While such a journey appeared to be most hazardous, it had engaged the financial support of the British government, and of the Royal Geographical Society.

Shackleton left Buenos Aires in the *Endurance* on Oct. 27, 1914, having somewhat modified his preliminary lines of action. The geologist and his sledging outfit were to be landed in South Georgia, while he investigated the ice conditions of Weddell Sea. If it seemed open and navigable, the party from South Georgia would be taken up, and the *Endurance* would proceed southward. He expected to put the ship in quarters in about 77° 30′ S., in a bay of Luitpold Land. A wireless receiver, installed by the Argentine government, was to keep the party in wireless communication during its voyage. If fortune favored, the transantarctic journey was to be commenced in the autumn of 1914, otherwise it was to be postponed until October, 1915. The field party was to consist of six men, equipped with 120 dogs, with sledges, an aëroplane for short journeys, and two sledges driven by aëroplane propellers with suitable engines as power. The station in Ross Sea was to be under Lieutenant McIntosh, who occupied it with the steamer *Aurora* from Australia.

The return of Sir Douglas Mawson in 1914 makes possible a summary of the results obtained by the Australasian Antarctic expedition of 1911–13, on that part of the continent of Antarctica known to geographers as Wilkes Land. At sea Captain Davis discovered a submerged plateau to the south of and as large as Tasmania, and a *deep* between Macquarie and Auckland Islands. On land two stations were established, Wild on the Shackleton ice-shelf, or oceanic ice-cap, in 95° W. longitude on the Antarctic circle, and Mawson, likewise on the circle, at Commonwealth Bay, in 140° W. longitude. By sledge journeys, under most adverse conditions, aggregating 3200 miles, the various members explored land between 63° and 68° S. latitude, and covering 27 degrees of longitude in the regions between 90° and 153° E. longitude. By soundings, the continental slope, and in most cases the shelf itself of Antartica, was indicated through 55 degrees of longitude. It has been demonstrated that in this region, unvisited for 70 years, there exists the Antarctic continent discovered and reported by Wilkes in 1840, though, as was surmised, there were errors in determining the exact location of the mainland. Mawson himself was the only survivor of a sledging party of three which made an outward journey of 310 miles, to the vicinity of the south magnetic pole, where Lieutenant Ninnis was lost in a crevasse with sledge and supplies. Dr. Mertz succumbed within 100 miles of the home station.

ARCTIC REGIONS. *Arctic America.* Its failures and its disasters have largely excited public sympathy and interest in the operations of the Canadian Arctic expedition under command of V. Stefansson. When Stefansson left Nome, Alaska, to enter the Arctic Ocean his perfected plans were as follows: The steamer *Karluk* was to explore the unknown sea to the west of Parry Islands, where he hoped to reach the 141° W. longitude to the northwest of Prince Patrick Land. The *Mary Sachs* was to establish a base at the head of Prince Albert Sound, whence a field party was to fill in the unknown coasts of Northeast Victoria Land. The destination of the *Alaska* was Dolphin and Union Strait for winter quarters, whence scientists were to explore the unknown country between the sea and Great Bear Lake. Unusually bad ice conditions made it impossible to carry out these plans. Despite every effort the *Alaska* and *Mary Sachs* were obliged to winter in Camden Bay, Alaska, where they were joined by Stefansson, who was separated from the *Karluk* owing to its drift. The *Karluk*, commanded by Capt. Robert Bartlett, was most unfortunate. She was frozen in near the northeastern coast of Alaska on Aug. 17, 1913, where Stefansson left her in early September, in order to hunt for fresh meat, and was prevented from returning by a severe storm. This easterly gale disrupted the pack and drove the *Karluk* to the west, where she was again and permanently ice-beset. Carried once within 4 miles of the coast, near Tangent Point, the plans of the crew to land were frustrated by ice activities. The ship's drift was now in a northwest direction, where the most northerly point was reached in about 73° N. latitude, 164° W. longitude. The ice then carried her to the southwest to a point nearly due north and 60 miles from Herald Island, where, on Jan. 11, 1914, the *Karluk* sank in 38 fathoms of water. During the drift soundings and dredging went on regularly. Among the large collections obtained were new species of starfish and other marine life from depths of more than 1200 fathoms. It appeared that the continental shelf, which is a narrow border along the coast of northeastern Alaska, projects several hundred miles from the adjacent Asiatic coast and a somewhat less distance directly north of Alaska west of Point Barrow. The maximum depth, some 1250 fathoms, is nearly double any previously recorded in these regions.

When in November Bartlett found his ship had reached the continental shelf he, as a matter of wise precaution, built a house on the floe and stocked it with food, clothing, general supplies, and sledging equipment to ensure the safety of his men. When the ship sank the party went comfortably into camp, pending steps to ensure a safe line of retreat. Dissensions now arose when Bartlett announced his decision to proceed to Wrangel Land, as the point whence relief would be obtained easiest. Dr. Forbes Mackay strongly disagreed, insisting that the party should seek the nearest land, which was Herald Island 60 miles distant, as against Wrangel Land, over 80 miles. Finally, after being released from responsibility in writing by Mackay, Bartlett yielded and gave him an ample outfit in food and sledge equipment. Mackay, confident through his Antarctic experiences with Shackleton, started with Murray and two other men, but the party was never seen again. It may be added that in September, 1914, when the *Bear* was unable to approach nearer than about 10 miles of Herald Island, there were no signs of life, though the air was clear.

In preparation for the main retreat Bartlett sent the mate Anderson forward with three other men, to haul food and explore the ice on the way to land. The party, left with supplies within 3 miles of Herald Island, disappeared, its fate being one of those polar mysteries that remain unsolved. It may be added that the casualty list of the *Karluk* was ultimately 11, as 3 died on Wrangel Land. Bartlett succeeded in bringing his remaining men safely to Wrangel Land, where they arrived on February 13. Camping near Cape Berry, where driftwood was abundant, the party with its ample food and improvised shelter were fairly comfortable. On March 18, believing that the proper time had come to seek relief, Bartlett with an Eskimo crossed Long Strait, 90 miles wide, under arduous and dangerous conditions. On the Asiatic coast he ultimately fell in with a Russian official, Baron Kleist, by whose aid he reached Providence Bay, whence Captain Pederson, whaler *Herrmann*, brought him to St. Michael on May 31. The United States Revenue Ship *Bear* was sent to bring back the shipwrecked men, but heavy ice prevented her reaching within 20 miles of Wrangel Land. Pending renewal of the efforts of the *Bear*, the surviving men were rescued by the schooner *King and Wing*, under Mr. Swenson, on September 7.

Recurring to Stefansson, after wintering in Camden Bay and exploring adjacent regions, he started in March, 1914, northward over the polar pack, along the 144th meridian, about 100 miles to the east of the route of Leffingwell and Mikkelsen, to discover the shores of the unknown land, whose existence has been separately predicted by Greely and by Harris. Stefansson reached the edge of the continental shelf in about 70° 20′ N., 140° 30′ W. After 16 days the supporting party under McConnell returned to the ship, while Stefansson and two men continued their northerly journey with the intention of turning back after 15 days. Stefansson had with him two men, six dogs, fifty days' dog food, and rations for sixty days, while the presence of bears and abundance of seal ensured other food through their rifles and 400 rounds of ammunition. The party has not been seen since. The Canadian government sent the whaler *Herrmann* to seek them, without results. The whalers *Belvedere* and *Polar Bear* later visited Banks Land without finding any traces of the missing men. It is reported that northeasterly winds largely prevailed from May to August along the Alaskan coast, and while favorable drift and judicious travel might bring them to Herald Island or Wrangel Land, it is evident that such had not been the case up to early September. Anderson and others of the scientific party did work in the spring and summer in the Mackenzie watershed. Independent of this expedition, Leffingwell renewed around Flaxman Island his exploration of ice-areas underlying plant-bearing lands, which problem he thinks that he has solved for that region.

It was reported last year that the Crocker Land Expedition, under D. B. MacMillan, had been forced by impassable ice-floes to establish its base at Etah, Greenland. MacMillan reports the failure of the main object of the expedition, not due, however, to the party. Geographical inaccuracies on the part of previous explorers, similar to that which removed Peary Channel of 1892 and 1895 from the map of Northeastern Greenland, now causes the disappearance of Crocker Land from the charts of the Polar Ocean. With energy and success MacMillan and Ensign Green in March, 1914, crossed Smith Sound and ice-covered Grinnell Land to Heiberger Land, where they laid down their reserve depots at Svarte Huk (Cape Hubbard). Thence they sledged northwest across the floes of the Arctic Ocean in quest of the expected land, which Peary reported that he had twice seen, on different days in June, 1906, from separate mountain summits. MacMillan and Green succeeded in reaching a point in the neighborhood of 82° 30′ N. latitude, 102° W. longitude, where Peary had charted the land. Although this point is about 90 miles beyond the sea-horizon of Peary from Svarte Huk, no land was seen. The ice-journey of MacMillan and Green was one of great peril, owing to water-leads and thin ice, and most of their dogs were lost. They reached land barely in time to save their own lives, for the next day the polar pack was entirely disrupted to such an extent as would have caused their death. It is believed that the soundings and collections of the sledging party will prove to be valuable. In the region between Cape York and Etah biological, geological, and other work was carried on by MacMillan's assistants and will be continued for another year.

Franz Josef Land. In August, 1912, a Russian Arctic expedition, under Captain Sedoff, left Archangel in an attempt to reach the North Pole via Franz Josef Land, and to return via Greenland. Wintering, 1912–13, on Pankratyal Island, in 76° N., Sedoff explored some adjacent and unknown parts of Nova Zembla. He reached Hooker Island, Franz Josef Land, in the *Foka*, September, 1913. Starting northward by sledge the following spring with 2 men and 24 dogs, he fell sick and died in March, between Rudolf and Hohenloe Islands. The expedition returned that summer to Archangel.

The Russian explorer Brussilof attempted to make the Northeast Passage by a route to the north of Nova Zembla, but his ship was ice-beset off the south coast of Franz Josef Land. Dissensions occurred, and of the 23 members, 11 left the ship, of whom 9 perished and 2 joined Sedoff in the *Foka*. When his ship was released from the ice-pack Brussilof, although provisioned only for a year, decided to push north, hoping that his ship would be carried along to the north of Spitzbergen to the west, as was the *Fram*. The Russian government, solicitous for the safety of the expedition, in July dispatched the famous Arctic navigator, Sverdrup, from Norway in the *Eclipse*.

Greenland. Apart from MacMillan's scientific work in the Cape York region, Rasmussen has continued his ethnographical and other researches in that district. He also made arrangements for his North-Polar Expedition of 1915, when Cape York will be made the home station. Under the direction and inspiration of the efficient Greenland Commission, Denmark has continued its exploration of fauna, flora, ethnology, and geology of Greenland. A knowledge and appreciation of the value of such extended researches has been limited among other nations, owing to the text of the volumes of the *Meddelelser* (the official publication) being in Danish. In 1914, however, under the editorship of W. Thalbitzer, there were compiled and correlated all available ethnographical data relative to the Ammassalik Eskimo, natives of the east coast. This volume appears in English, and is published in Copenhagen at the expense of the Carlsberg Fund. It treats of the environment, climate, material and intellectual culture, social life, beliefs, character, traits, hunting weapons, dress and ornament, toys, music, housekeeping, and social customs of the Ammassaliks. These natives practically pertain to the stone age period, which makes this memoir valuable to ethnologists.

Siberian Ocean. Brussilof's attempt to make the Northeast Passage is referred to under *Franz Josef Land*. Geological examination of rocks from Nicholas II Land disclose an identity of geological formation with that of Cape Cheliuskin and of the east coast of Taimur Peninsula, thus indicating that the newly discovered land is a northern extension of the Asiatic mainland. The observations of Nansen and Lied in 1913 indicate the feasibility of regular summer navigation via Kara Sea between the Baltic and the Yenesei, 3000 miles distant. Lied renewed his investigations on a much larger scale in 1914. Meanwhile Vilkitski has again attempted the Northeast Passage from Bering Strait. The vast importance of summer navigation over 2500 miles in distance, between the Pacific and the Yakout region, via the Siberian Ocean, is greater from year to year. That region with its 300,000 inhabitants is developing very slowly. Rich in furs, oil, horses, cattle, etc., transportation charges eat up everything.

Spitzbergen. Although the corporations exploiting the coal resources of Spitzbergen have made it a land of industrial appliances, and of wireless installations, yet explorations continue. Bruce renewed his hydrographical and geological work in Stor fiord, although ice conditions and war exactions interfered. Stoll, under the patronage of the Prince of Monaco, crossed from Van Mijens to Agardh Bay, covering an unknown area. It appears that Southern Spitzbergen is not continuously glaciated, the region seen by Stoll being broken into massifs by open, verdant valleys.

POLIOMYELITIS, EPIDEMIC (INFANTILE SPINAL PARALYSIS). Capt. R. H. Pierson of the United States Army, Medical Corps, of Fort Gibbon, Alaska, published a study of a small epidemic of this disease which occurred among the Indian fishing villages on the Yukon River. There were about 30 cases, with 4 deaths. The interesting feature of the epidemic was its apparent connection with an epidemic of distemper among dogs. The human subjects were attacked following the dog epidemic, and the symptoms manifested by the dogs were the same as those in the human victims. Pierson points out that the association of the dogs with their masters is very close. The dog is almost the only domestic animal, towing boats in summer, and drawing sleds in winter. They are scavengers of the fish camp. Epidemics of distemper occur among them every three or four years, young animals being mostly affected. In the summer of 1913 an epidemic occurred among the dogs of the Yukon and Tanana valleys, becoming prevalent during July and August and ceasing in September. The type of this distemper was very severe, 50 to 80 per cent of the young animals dying or becoming so badly affected that they had to be killed. The disease begins with coryza, running from the nose, collection of pus in the eyes, with fever and loss of appetite. The animal may die in two or three days, or the disease may become more chronic and the animal live for several weeks and ultimately recover. Convulsions and paralysis of the extremities occur early in the disease, in severe cases. In human subjects the symptoms were parallel, the disease beginning with an attack of influenza, paralysis of the legs or arms, and involvement of the lungs, with fever and general malaise. Pierson does not think that the disease spreads by direct contact, but that there is an intermediate carrier, probably a fly. When the flies go, the distemper ceases.

POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF. A learned society founded in 1889 for the purpose of promoting political and social science in the broad sense of the term. Its membership is about 6000, distributed in every State in the Union, and 35 foreign countries. The society issues a bimonthly publication called *The Annals*. During the year the subjects dealt with in the *Annals* were: "Housing and Town Planning," January; "Reform in the Administration of Justice," March; "State Regulation of Public Utilities," May; "International Relations of the United States," July; "Government Regulation of Water Transportation," September; "Women in Public Life," November. A meeting was held on Dec. 5, 1914, which discussed "Child Labor Regulation and Its Results." The officers for 1914 were: President, L. S. Rowe, Ph.D., University of Pennsylvania; secretary, J. P. Lichtenberger, Ph.D., University of Pennsylvania; editor of the *Annals*, Clyde Lyndon King, Ph.D., University of Pennsylvania; clerk, N. J. Smith-Fisher, West Philadelphia P. O., Philadelphia.

POLITICAL ECONOMY. A considerable number of articles will be found elsewhere in this volume treating various problems and movements of economic interest. A general survey of business conditions during the year is given under FINANCIAL REVIEW. In the article LABOR will be found references to the various topics treating different aspects of the labor problem. The article BANKS AND BANKING includes statistics of all banks in the United States, and the history for banking and currency reform, and is supplemented by articles on the several kinds of banking institutions, and by that entitled AGRICULTURAL CREDIT. Other articles related to the general subject of economics are: INSURANCE; OLD-AGE PENSIONS;

Prices; Social Economics and subjects there referred to; Tariff; Taxation; and Trusts.

American Economic Association. The twenty-seventh annual meeting of the American Economic Association was held at Princeton, N. J., December 28–31. At the same time and place were held the sessions of the American Statistical Association and the American Sociological Society. At the opening session the presidential addresses of all three of these societies were given. President John H. Gray of the Economic Association spoke on "Economics and Law"; President John Koren of the Statistical Association on "Some Statistical Ideals"; and President Ross of the Sociological Society on "Free Communication and the Struggle for Life." (See Sociology.) A second session dealt with "Speculation on the Stock Exchanges and Public Regulation of the Exchanges," with papers by Samuel T. Untermeyer of New York, and Prof. Henry C. Emery of Yale University. "Market Distribution" was treated by Royal Meeker, Commissioner of Labor Statistics, and Prof. L. D. H. Weld of the University of Minnesota. "The Statistical Work of the United States Government" was considered at a joint session with the American Statistical Association. Other subjects considered were: "The Relation of Education to Industrial Efficiency"; and "The Effect of Inheritance and Income Taxes on the Distribution of Wealth," with papers, respectively, by Prof. Edward B. Jones of the University of Michigan, and Prof. T. S. Adams of the Wisconsin Tax Commission. A final session on "The Public Regulation of Wages" was based on papers by Prof. Frank H. Dixon of Dartmouth College and Mrs. Glendower Evans of the Massachusetts Minimum Wage Commission.

Bibliography. *General Works and Theory.* Thorstein Veblen, *The Instinct of Workmanship, and the State of the Industrial Arts;* W. Cunningham, *Christianity and Economic Science;* J. S. Nicholson, *The Vagaries of Recent Political Economy;* F. Oppenheimer, *L'économie pure et l'économie politique;* R. G. Hawtrey, *Good and Bad Trade—An Inquiry into the Causes of Trade Fluctuations;* Hugo Bilgram, *The Cause of Business Depressions, as Disclosed by an Analysis of the Basic Principles of Economics.*

Historical and Descriptive Works. H. Andrillon, *L'expansion de l'Allemagne. Ses causes, ses formes, ses conséquences;* E. P. Cheyney, *A History of England;* H. Lindemann, R. Schwander, and Suedekum, editors, *Kommunale Jahrbuch;* W. Offergeld, *Grundlagen und Ursachen der industriellen Entwicklung Ungarns;* Karl Helfferich, *Germany's Economic Progress and National Wealth 1888–1913;* Raynor G. Wellington, *The Political and Sectional Influence of the Public Lands, 1828–1842;* H. E. Fenchelle, *Italy: Industrial and Financial Development;* J. F. Fraser, *The Amazing Argentine. A New Land Enterprise;* A. Loveday, *The History and Economics of Indian Famines;* J. A. R. Marriot, *The English Land System;* J. McFarlane, *Economic Geography;* G. H. Perris, *The Industrial History of Modern England.*

Trade and Transportation. L. E. Fischer, *Economics of Interurban Railways;* R. Kenney, *Men and Rails;* T. Renaud, *Die Entwicklung des Eisenbahnwesens in Preussen seit dem Jahre 1888;* B. Nogaro and W. Oualid, *L'Evolution du commerce, du crédit, et des transports, depuis cent cinquante ans;* Douglas Owen, *Ocean Trade and Shipping;* E. R. Dewsnup and J. P. Curran, *Freight Classification;* F. M. Halsey, *The Railways of South and Central America;* O. Hough, *Water Traffic and Rates;* A. W. Kirkalady, *British Shipping: Its History, Organization and Importance;* L. Nixon, *The Canal Tolls and American Shipping;* E. Protheroe, *The Railways of the World;* Clive Day, *A History of Commerce.*

Business. C. C. Christiansen, *Chemische und Farben-Industrie;* F. Lownhaupt, *What An Investor Ought to Know;* A. S. Dewing, *Corporate Promotions and Reorganizations;* R. Goerrig, *Der Tabaktrust und seine Gefahren für Deutschland;* Edward D. Jones, *Business Administration: Its Models in War, Statecraft, and Science;* Arthur Lowes Dickinson, *Accounting Practice and Procedure;* L. D. Brandeis, *Business—A Profession;* T. Conway, *Investment and Speculation; a Description of the Modern Money Market and Analysis of the Factors Determining the Value of Securities;* L. M. Gilbert, *The Psychology of Management;* P. Neystrom, *Retail Selling and Store Management;* C. B. Thompson, *Scientific Management;* Arthur S. Dewing, *Corporate Promotions and Reorganizations.*

Money and Banking. Thomas Conway, Jr., *The Operation of the New Bank Act;* Irving Fisher, *Why is the Dollar Shrinking: A Study of the Causes Underlying the High Cost of Living;* Karl Kautsky, *The High Cost of Living, Changes in Gold-production, and the Rise in Prices;* A. Landry, *Le crédit industriel et commercial;* E. H. Youngman, *The New Banking and Currency Law;* V. Gonzales, *Modern Foreign Exchange;* H. M. Jefferson and F. Escher, *Banking Practice and Foreign Exchange;* William Lexis, *Das Kredit und Bankwesen;* P. M. Warburg, *Essays on Banking Reform in the United States;* Horace White, *Money and Banking,* 5th ed.

Labor. C. Booth, *Industrial Unrest and Trade-Union Policy;* F. Keeling, *Child Labor in the United Kingdom;* F. Keeling, *Unemployment;* Research Department of the Women's Educational and Industrial Union of Boston, *Vocations for the Trained Woman;* R. H. Tawney, *The Establishment of Minimum Rates in the Chain-Making Industry under the Trade Boards Act of 1909;* Arnold Freeman, *Boy Life and Labor; the Manufacture of Inefficiency;* A. S. Crapsey, *The Rise of the Working-class;* L. McKenna, *The Church and Labor;* W. G. Thompson, *The Occupational Diseases; Their Causation, Symptoms, Treatment, and Prevention;* A. W. Kirkaldy, *Economics and Syndicalism;* P. Louis, *Le syndicalisme Européen;* E. Pouget, *Sabotage,* translated from the French with an introduction by A. Giovannitti; J. A. Estey, *Revolution Syndicalism; An Exposition and a Criticism.*

POLITICAL PARTIES IN THE UNITED STATES. See United States, section *Elections in 1914;* also section *Politics and Government* of the various State articles.

POLO. In a year remarkable for upsets in the sporting world, perhaps the greatest surprise was the capture of the International Challenge Cup by the polo players of Great Britain. America's "big four" had wrested the trophy from the Hurlingham Club in 1909. In 1911, and again in 1913, British teams tried in vain to retrieve their loss.

The 1914 matches were played on the field of the Meadow Brook Club at Westbury, L. I., on June 13 and 16, and 35,000 persons witnessed the struggle. The American four comprised Devereux Milburn, J. M. Waterbury, Jr., Lawrence Waterbury, and Rene Montagne. The British representatives were all army officers who responded to the hurry call of Lord Wimborne after several attempts to rally a strong team had failed. The British in fact were on the verge of withdrawing their challenge when Wimborne stepped into the breach. The challenging four consisted of Capt. Leslie St. George Cheape, who had played in the international matches of 1913; Capt. Vivian Lockett, also a member of the 1913 team; Maj. F. W. Barrett, and Capt. H. A. Tompkinson.

Lord Wimborne's team was not regarded in England as a serious contender for the cup, and the American defenders were strong favorites in the betting on the eve of the matches. The first game was set for June 9, but an injury to Captain Cheape, received in a practice scrimmage, led the Americans, unrequested, to grant a postponement until June 13.

The fours lined up for the opening conflict as follows: America—No. 1, La Montagne; No. 2, J. M. Waterbury, Jr.; No. 3, Milburn; back, L. Waterbury. Great Britain—No. 1, Captain Tompkinson; No. 2, Captain Cheape; No. 3, Major Barrett; back, Captain Lockett.

The invaders displayed a wonderful burst of speed from the outset, showing a marked superiority in both play and riding. The work of Captain Lockett and Captain Cheape was especially brilliant, and the final score gave a total of 8½ goals to the British, as against 3 for the Americans.

The second and deciding match resulted in another triumph for Lord Wimborne's men despite a shift in the line-up of the cup defenders, whereby Milburn went to back, and L. Waterbury to No. 3. In the second battle each team tallied 5 goals, but America was penalized 2¼ goals, whereas the British lost only 1 point in this manner. The visitors used the same tactics, as in the first game, and swept their opponents off their feet by the fury of their early attack. The score at the end of the second period was 3 to 2 in favor of Great Britain. The defenders then rallied, and playing in whirlwind fashion scored four times in the fourth, fifth, and sixth periods. There was no scoring in the second chukker, but in the final period Milburn counted for America in 1 minute, 40 seconds. Major Barrett followed with the tally for his side which meant victory. Much credit for the triumph of the Britons must be given to their ponies, which proved speedier and better trained than the American horses.

Aside from the international matches, little interest was shown in the sport in the United States, although some polo clubs were organized in the Western States which may furnish material in the future for a four that will recover the lost trophy. The best showing of the season was made by the Meadow Brook Magpies, who defeated the Aiken Tigers in the finals for the junior championship, and later routed the Narragansetts for the senior title. The Atlantic Cup, the gift of W. A. Hazard, was won by the Newport four, who defeated the Philadelphia Country Club team in the final match by a score of 11¾ to 4¾. Point Judith captured the Gladstone Cup by its victory over Bryn Mawr. The score was 7¾ to 7.

POOL. See BILLIARDS AND POOL.

PORT IMPROVEMENT. See DOCKS.

PORTO RICO. POPULATION. The estimated population on July 1, 1914, was 1,184,489. The population in 1910 was 1,118,012.

AGRICULTURE. The important industries of the island are related entirely to agriculture, and of these industries the raising of sugar is the most important. Although great improvements have been made in the methods of growing sugar, there has been for several years a marked decline in the industry. To a large extent this is due to changes in the duty on sugar. The decrease in the exports of sugar in 1914 amounted to $6,378,823. This was produced by a sharp decline both in quantity, which was about 62,000 tons less than in 1913, and in price, which was $6.43 per ton less than the year previous. The total value of the sugar exports in 1914 was $20,240,335, compared with $26,619,158 in 1913. In quantity, 320,633 short tons were exported in 1914, compared with 382,700 in 1913. The raising of tobacco is the second industry in agricultural importance. The exportations of unmanufactured tobacco increased in 1914 to 9,244,490 pounds, valued at $3,206,610. There was a decrease of about 8 per cent in the number of cigars consumed and exported, due largely to a strike of the cigar workers which lasted nearly four months, the total output being 263,075,534. The growing of coffee is an industry of great and increasing importance. In 1914 the coffee crop exceeded all previous records, aggregating 50,211,947 pounds, but owing to a decrease of eight-tenths of a cent per pound in price, the value of the coffee exported was $8,193,544, or $317,772 less than the value of the exportations in 1912–13. Other agricultural products of importance are fruits, including pineapples, oranges, and grapefruit. The total value of the shipments of fruit of all kinds showed an increase in 1914, reaching a total of $3,400,903.

Careful attention has been given to the development of agriculture in the island, for which purpose the insular board of agriculture, in coöperation with the agencies of the Federal government, has spread information to the various producers throughout the island as to the most effective means to be adopted in working out the various problems of cultivation, preservation, transportation, and marketing of crops. Only a beginning has been made in the broad field of scientific agriculture, but the insular government has thoroughly aligned its work with that of the Federal government. The representatives of the two governments are endeavoring to work together toward the development of intensive farming and diversified agriculture to the end that the rural inhabitants, working upon small plants of land in which they will have a proprietary interest, may become more independent and self-respecting citizens.

COMMERCE. The value of the imports and exports in the fiscal year 1913–14 aggregated $79,509,549, a decrease of $6,494,078 in the corresponding total of the previous year. Imports were valued at $36,406,787, and exports at $43,102,762, a decrease in the former of $493,275, and in the latter of $6,000,803. As noted above, the decrease in the value of exports is due almost entirely to the smaller exports of sugar. Outside of sugar there was a slight increase of about $378,000 in the value of exports. Exports to the United States reflected quite accurately the decline in sugar, falling off $6,115,443. There was a slight increase in the imports from the United States, namely $586,637. In 1914, 84 per cent of the external commerce of the island was carried on with the United States, Cuba being the largest customer outside of the United States. Of the external purchases approximately 90 per cent were made in the mainland markets of the United States, representing an expenditure of over $32,500,000, chiefly manufactured articles. In exchange for this the mainland markets received from Porto Rico $34,423,180 worth of merchandise, consisting almost entirely of raw products.

Internal business, while slowly adjusting itself to the changes made necessary in the sugar industry, has naturally assumed a conservative and waiting attitude which has prevented the inauguration of new enterprises. Dread of the possible results of the free sugar provision of the tariff law has tended to check progress and developments of other lines of business interwoven with this industry.

TRANSPORTATION. Road building was carried on in 1914, and a number of bridges were constructed. During the fiscal year 45.1 kilometers of macadamized road were completed. The Legislative Assembly of 1913 appropriated $15,000 for the repair of the old Southern Coast Road between Guayanilla and Ponce. During 1914, 14 kilometers of this road were repaired, and over 1000 kilometers of road have been constructed in the island since the American occupation. Improvements to the harbor of San Juan were continued during the year by dredging and other works. It is proposed to reclaim a large portion of the swamps surrounding San Juan Bay with the material dredged from the harbor.

IRRIGATION. The irrigation commission worked during the year upon tasks which have in the main been completed. These were first to form a temporary irrigation district, and second the appraisement of water concessions. The second task had to be performed first, for this involved the appraisement of bad water concessions on the rivers used by the irrigation service for the irrigation of lands in the district; and as credits for these concessions at their appraised value had to be given to their owners, they must also be charged against the total area of land to be included in the temporary district. All these appraisements have practically been completed, and settlements made with the holders of them without recourse to the courts. This has left the way open for the formation of the temporary district, which also has been practically completed. Work was carried on on a number of irrigation canals and dams during the year.

EDUCATION. The problem of illiteracy is the chief one relating to education in Porto Rico, and great efforts have been made by the authorities to deal with it. Expenditures for elementary education have been very large, and efforts to improve conditions have been loyally supported by the people of the island, who realize that the foundation stone of their school system is the rural school. Over 79 per cent of the people live in the rural districts, and of these 70 per cent are illiterate, and this in spite of all the efforts that have been made in the 14 years of American rule. In 1914 there were 331,000 children of school age in rural districts, and of these only 109,534 were enrolled some time during the fiscal year. These schools were taught in about 1200 separate buildings, of which only 300, or one-fourth, are the property of the school boards and constructed especially for school purposes. Of these buildings 53 were constructed during 1914.

In addition to the effort of the extension of rural school work much attention and thought were given during the year to improvement and enriching the course of instruction. Elementary courses in practical agriculture were taught in the rural schools throughout the island, and while the Spanish language is generally used as the vehicle of instruction, the English language is taught in all the rural schools, beginning with the second grade.

In the urban zone, where the educational work is done in graded schools, there is naturally much more rapid progress. Of the 83,000 children of school age in the cities and towns, 85 per cent were enrolled in 1914. Forty-one per cent of the buildings belong to the school boards, and the course of instruction includes vocational training for both sexes in the last three of the eight grades. The English language is the vehicle of instruction in nearly all subjects. The average daily attendance in all public schools during the year was 155,830, an increase of nearly one-third over 1913. The total enrollment in all public schools was 207,010, an increase of 45,225 over the preceding year. The number of schools in operation was 4330, and the average number of teachers 2564. Complete high schools are maintained in five cities, San Juan, Ponce, Mayaguez, Arecibo, and Humacao. These schools offer four years' work in Spanish, English, mathematics, science, Latin, music, and drawing, three years' work in history, and two years' work in French. Commercial departments are maintained in these schools, and they have also industrial departments. Practical instruction in agriculture has been attempted with success, as has also manual training and household economics. The total amount expended for education by the insular government in 1914 was $1,770,419, and by the local authorities $728,165. The enrollment in the University of Porto Rico in 1914 was 208.

HEALTH AND SANITATION. The work of sanitation went forward with success throughout the year. The lowest death rate ever recorded was achieved, and the special work against hookworm disease and tuberculosis was steadily prosecuted. At two or three stations in the interior of the island many hundreds of cases of hookworm were treated in the few months during which it was possible to continue them in operation. The sanitation commission has also directed a systematic and very successful campaign for the provision of pure water supply and other sanitary necessities in the cities of the island. Nine cities installed departments of waterworks during the year, making 26 cities in the island which now possess this modern necessity. There were 45,609 births and 21,775 deaths recorded during 1913–14, an excess of 4607 births over the number recorded during the previous year. Under an act of the Legislature of 1913 the Institute of Tropical Medicine and Hygiene of Porto Rico was reorganized as an independent body for the purposes indicated by its name. The Institute is composed of a director and one member appointed by the Governor (both being positions achieved by experience in tropical medicine), and the director of sanitation as an ex officio member.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the Insane Asylum, an Asylum for the Blind, Girls' Charity School, Boys' Charity School, and the penal institutions, including the Penitentiary, Reform School, and the jails. The charitable institutions, with the exception of the Blind Asylum, are in San Juan. The total number of prisoners admitted to the prison and jails during the year was 6032. A large number of prisoners are employed in labor on the roads.

POLITICS AND GOVERNMENT. The Legislature met in regular and extraordinary session in 1914. The regular session lasted from January 12 to March 12, and the extraordinary session from March 14 to March 28, 28 acts and 13 joint resolutions being passed. The most important measures included the following: An act providing for secondary railroads subventioned by the insular government; an act authorizing an issue of $1,000,000 worth of insular bonds for public roads, bridges, and buildings; an act amending the closing law; an act amending the sanitation law and placing the cleaning and watering of streets, sewers, and collection of dead and stray animals under the municipalities; an act authorizing the municipalities to levy and collect industrial and commercial license taxes; a resolution providing for the appointment of a joint commission to investigate expenditures and recommend economies which should be made in conducting the business of the insular government; a resolution accepting the donation of $100,000 by Mr. Andrew Carnegie for a library building; and a resolution authorizing a free issue of $150,000 of insular bonds for completion of the irrigation system. There were no political events of importance during the year.

PORTUGAL. A European republic occupying the western coast of the Iberian Peninsula. Capital, Lisbon.

AREA AND POPULATION. In the table below are given areas by districts with the results of the census of Dec. 1, 1911, as compared with figures for 1900; density for 1911:

	Sq. kms.	*1900*	*1911*	*D.*
Aveiro	2,758	303,169	336,243	110
Beja	10,255	163,612	192,499	19
Braga	2,698	357,159	382,276	142
Bragança	6,510	185,162	192,024	29
Castello Branco	6,683	216,608	241.184	36
Coimbra	3,907	332,168	359,387	92
Evora	7,400	128,062	148,295	20
Faro	5,019	255,191	272,861	54
Guarda	5,482	261,630	271,616	49
Leiria	3,412	238,755	262,632	77
Lisbon	7,941	709,509	852,354	107
Portalegre	6,231	124,481	141,481	28
Porto	2,312	597,935	679,540	294
Santarem	6,619	283,154	325,775	49
Vianna do Castello	2,221	215,267	227,250	102
Villa Real	4,273	242,196	245,547	57
Viseu	5,019	402,259	416,744	83
Total	88,740	5,016,267	5,547,708	62
Azores	2,388	256,291	242,565	101
Madeira	815	158,574	169,783	208
Republic	91,984	5,428,132	5,960,056	65

In 1900 the continental urban population was 32.4 per cent of the total, the rural population 67.5 per cent. The population according to the census of Dec. 1, 1911, included 2,828,691 males and 3,131,365 females. The principal towns, with their population in 1911, were: Lisbon, 435,359; Oporto, 194,009; Setúbal, 30,346; Funchal (Madeira), 24,687; Bragan, 20,844; Coimbra, 20,581; Evora, 17,901; Ponta Delgada (Azores), 16,179; Covilha, 15,745; Faro, 12,680; Tavira, 11,665; Portalegre, 11,603; Aveiro, 11,523; Elvas, 10,645; Vianna do Castello, 10,486; Beja, 10,113; Angra do Heroismo (Azores), 10,067.

Primary instruction is theoretically compulsory, but over 70 per cent of the population over six years of age remain illiterate. All creeds are now tolerated.

PRODUCTION AND COMMERCE. The census of 1900 returned 3,367,199 persons as engaged in agriculture. The principal agricultural products are corn, and oxen in the north, rye, and sheep and goats in the highlands, wheat and corn in the central regions, and wheat and swine in the south. Vines flourish all over the country, and olive oil, figs, fruits, and vegetables are produced for export. Forests cover 4,005,072 acres. No recent complete figures are available for area and production of principal crops. The mineral wealth of the country remains largely unavailable because of lack of fuel and cheap transportation. The output and value at the mines of the chief mineral products in 1912 were as follows: lead, 54,562 metric tons and £23,029; copper precipitate, 5582 and £99,528; sulphur ore, 339,096 and £103,632; wolfram, 982 and £102,483; silver ore, 4646 and £28,116; anthracite, 15,366 and £11,640; arsenic, 941 and £9406; iron, 29,413 and £6362; copper pyrites, 8843 and £2278; copper, 905 and £1160; uranium, 850 and £798; antimony ore, 100 and £689; gold, 3514 and £518. The value of the fisheries products in 1910 was 5,919,842 escudos. Imports and exports by great classes, special trade, are given in the table at the foot of this page for 1911 and 1912, in escudos.

The import of wheat was valued in 1911 at 582,418 escudos; cotton, 6,104,997; coal, 5,105,592; codfish, 3,872,729; cottons and yarn, 3,895,251; industrial machinery, 2,305,415; sugar, 2,875,938; hides and skins, 2,567,473; rice, 1,772,677; chemical products, 1,758,244; oil seeds, 1,903,552; wool, 1,685,372. The export of wine was valued at 11,923,478 escudos; cork,

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
Living animals	3,031,518	2,515,093	3,948,344	3,041,498
Raw materials	32,493,294	33,688,887	7,140,220	7,897,069
Textiles	7,682,182	7.976,578	1,522,209	1,171,517
Food substances	12,805,429	17,020,291	19,043,840	19,776,154
Machinery, etc.	6,077,472	6,891,058	188,986	144.970
Various mfrs.	5,899,736	6,915,922	2,276,701	2,293,765
Packing	137,210	132,159	....	....
Total	68,126,841	74,639,488	34,065,250	34,824,978

3,402,202; preserved fish, 2,300,602; fruits and vegetables, 1,635,610; cottons and yarn, 1,184,535; cork manufactures, 975,778; timber, 914,986; copper ore, 868,857; olive oil, 543,867; fish, 803,389. The United Kingdom contributed imports valued at 19,398,000 escudos, and received exports valued at 6,935,000; Germany, 12,128,000 and 3,300,000; United States, 5,836,000 and 842,000, etc.

Vessels entered (1911), 10,370, of 19,154,239 tons. There were in the merchant marine Jan. 1, 1911, 66 steamers, of 70,193 tons, and 259 sailing vessels, of 43,844 tons.

COMMUNICATIONS. Railways in operation Dec. 31, 1913, 1849 miles, of which 711 were State-owned. Late in the year 1914 the President of the Portuguese Republic signed a decree for the electrification and lease of the railway connecting Lisbon and Cascais, a line about 16 miles in length, owned by the Portuguese Railway Company, double tracked, broad gauge, and rock ballasted. This line serves the so-called Riviera of Portugal, and it was proposed to operate electric trains every half hour, each making the entire run in 25 minutes.

NAVY. The effective fleet, exclusive of training ships, yachts, etc., included 1 armored coast-defense vessel, of 3030 tons; 4 cruisers, of 9410; 6 gunboats, of 2573; 11 gunboats, of 4300; 1 torpedo gunboat, of 535; and 4 torpedo boats, of 252. There were under construction 2 torpedo-boat destroyers and 3 torpedo boats. The new programme contemplates a new squadron to contain 3 dreadnoughts, 3 cruisers, 12 large destroyers, and 6 submarines.

ARMY. In Portugal military service is compulsory between the ages of 20 and 45, the army consisting of an active militia with an active reserve and territorial forces. The recruit is summoned in his 21st year for 15 weeks' service in the infantry, 20 in the artillery, and 30 in the cavalry, and each year thereafter up to the end of the 30th year he is required to undergo an annual training period of 2 weeks. He is then held for service in the active reserve, but without training for 10 years, and afterwards for 5 years in the national army. The army on a peace footing, exclusive of the colonial garrisons, is estimated at about 30,000, which on a war basis could be raised to 120,000 men, who had had military training, and eventually could be augmented by 140,000 men, who also had been trained.

FINANCE AND GOVERNMENT. The escudo, worth $1.08, is the unit of value. The budget for 1913–14 estimates the revenue as follows: Direct taxes, 12,479,069 escudos; registration and stamps, 9,997,700; indirect taxes, 23,847,700; port dues, 45,575; national property and income on investments, 14,858,519; revenue-earning administrations, etc., 10,891,401; total ordinary, 72,119,964; extraordinary, 3,774,250; total revenue, 75,894,214. Expenditure: Public debt, 27,911,770 escudos; presidency, congress, 2,474,546; ministry of finance, 5,205,858; interior, 6,115,409; justice, 1,266,697; war, 9,856,470; marine, 3,825,373; colonies, 2,296,644; foreign affairs, 566,711; public works, 14,663,977; general treasury of deposits, 731,872; total ordinary and extraordinary, 74,915,327.

The President, elected for four years, is the executive. The legislative authority is vested in a congress composed of a chamber of deputies of 164 members, and a senate of 71 members. President, 1914, Dr. Manoel de Arriaga, elected Aug. 24, 1911, for four years.

HISTORY

OVERTHROW OF COSTA. The cabinet which Dr. Alfonso Costa formed in January, 1913, was compelled to resign in January, 1914, after having misgoverned Portugal for a little more than one year. To be sure, Dr. Costa pointed with pride to the surplus of $3,500,000 which appeared in the budget estimates for the year 1914–15, but the apparent favorable balance was subsequently discovered to have rested upon a false financial foundation. A railway strike in January served as an emphatic reminder that the working classes had not yet experienced that improvement which the government had promised them in their economic condition. Mr. McCullagh, writing in the *Nineteenth Century and After* continued his exposures of the abuses of the Republican régime. The republic had become an engine of tyranny in the hands of corrupt politicians. Editors were imprisoned and journals suppressed if they ventured to criticise the ministry. A word from one of the government's spies was sufficient to cast a man into prison. Scores of prisoners who had committed no fault, or whose only fault had been adherence to convictions which the government disliked, suffered the tortures of solitary confinement and were not even given a legal trial. The franchise was so restricted as to be a mockery of democracy. Anti-clericalism was being pushed to such extremes that freedom of worship no longer existed, and the power of the State was used to prevent the Catholic clergy from taking disciplinary action against priests who married or lived immoral lives. School children were paraded through the streets bearing the motto: "No God! No Religion!" Even those who sympathized with Costa's attacks on the Church were scandalized by his cynical disregard for civil liberty and political integrity. Machado Santos, "the founder of the Republic," and Bernardino Machado, foreign minister under the first provisional government, bitterly reproached the premier who had made Republicanism a disgrace. Senator Joao de Freitas publicly accused Costa of scandalous abuse of power and corruption, of accepting bribes, of manipulating the revenues of San Thome for the benefit of his brother-in-law. On January 9, speaking before the Senate, Freitas gave further details of the prime minister's shame. So violent was the sensation caused by the Senator's disclosures, that soldiers had to be called in to restore order in the Senate. Finally President Arriaga invited Costa to resign, in order that a new and more popular ministry might be formed, which would be able to pass the budget, amend the law of public worship, declare a generous political amnesty, and preside over a general election. On January 26 Dr. Costa offered his resignation. On February 8 Senhor Bernardino Machado formed a new cabinet as follows: Premier, interior, and foreign affairs, Bernardino Machado; justice, Manoel Monteiro; finance, Thomaz Cabreira; war, Gen. A. Pereira d'Eca; public works, Achilles Goncalves; marine, Captain Neuparth; colonies, Lisboa Lima; education, Sobral Cid. The programme of the Machado ministry included electoral reform, amnesty for political offenders, and the revision of the law regarding the separation of Church and State.

Amnesty for Political Offenders. Public opinion abroad was so deeply stirred by the revelation of the shocking treatment of Portuguese political offenders, that on February 6 a meeting in London resolved, "that this meeting protests against the violation of justice on the part of the Government of Portugal in arresting and imprisoning men and women on account of their religious and political opinions, denying them the right of trial by due form of law; and calls upon the British government to make representations to Portugal with a view to securing a general amnesty for all political prisoners, so that the principles of ordinary justice and humanity may be established in the country." Whether or not the British protest had effect, on February 19 the Portuguese government introduced an amnesty bill, providing that insurrectionary leaders should be exiled, and amnesty granted to others; the persons then in prison to be given free trial, with the purpose of determining whether they should be exiled or acquitted. The bill was passed by the Chamber, February 19, by 102 votes to 24; after a dispute between Senate and Chamber, a joint sitting of both houses approved the bill on February 21. The list of the prisoners who were to be exiled included four priests, Senhor Homem Christo (who had attacked the government through the press), Capt. Paiva Couceiro, Senhor Joao Azevedo Coutinho, Joao d'Almeida, Jorge Camacho, Mario Dias, and Victor Sepulveda.

Machado Cabinet and the War. Dissensions within the cabinet made it necessary for Premier Machado to eliminate the three Democratic members, and to reorganize the ministry as follows: Premier and minister of foreign affairs and interior, Bernardino Machado; justice, Manoel Monteiro; finance, Santos Lucas; war, Gen. Antonio Pereira d'Eca; marine, Peres Rodriguez; public works, Almeida Lima; colonies, Couceiro Costa. As the ally of Great Britain, Portugal was liable to be called upon for assistance in the war against Germany and Austria-Hungary. On August 8 Premier Machado announced that Portugal was ready to furnish 10,000 soldiers to fight for Great Britain. Congress was convoked October 16 to authorize mobilization, and on November 23 voted to join the allies whenever it should be necessary. Already 500 men had been sent to Africa on board British transports. Later rumors from Paris indicated that 26,000 Portuguese soldiers were assisting the allies in France. The war did not affect the interests of Portugal vitally enough to arouse the nation to a high pitch of enthusiasm. On October 20–21 Adriano Beca started an insurrection in the cities of Braganza and Mafra; the revolt was suppressed, but it proved that Portugal was not inspired with a unanimous national resolve. Still more convincing evidence of dissatisfaction was afforded when the cabinet resigned on December 5 as the result of criticism. A Democratic cabinet was formed on December 13 by Victor Coutinho. Senhor Coutinho announced that he would take such steps as would enable Portugal to bear a creditable part in the war, for he believed that Portugal's colonial possessions as well as her national existence were at stake. See the War of the Nations; also United States; and International Arbitration and Peace, *Bryan-Wilson Treaties*.

PORTUGUESE EAST AFRICA (Mozambique). A colony of Portugal, on the east coast of Africa, between German East Africa and British South Africa. Area, 293,860 square miles, carrying a population of about 3,120,000. The capital is Lourenço Marques, with about 10,000 inhabitants, nearly half European. It is also one of the principal ports; other ports are Mozambique, Beira, Inhambane, and Chinde. The leading products are rubber, sugar, coconuts, beeswax, and minerals. Coal and gold exist. A considerable part of the trade of British South Africa passes through Beira and Lourenço Marques and thence by the Beira or the Delagoa Bay Railway. The latter has a length of 57 miles in the colony. The Beira Railway extends 204 miles to the British border and thence to Bulawayo. A line from Lourenço Marques to the Swaziland border is under construction. The Gaza line from Chai-Chai to Manjacase has 32 miles in operation, and that from Mutamba to Inharrime 25 miles. The beginning of the work on the proposed Mozambique-Nyassaland was made during the year, and $185,000 was placed, as an installment of the cost, at the disposal of the engineer in charge. This line was estimated to cost about $17,500 per mile, and to be about 342 miles in length, of which 62 miles was to be in British territory, and to extend from Mozambique on the east coast of Portuguese East Africa inland to British territory on the west. Imports, 1912, 13,483,297 milreis; exports, 6,229,276; reëxports, 6,294,516; transit, 32,322,748. The trade is divided among the state territories, the Mozambique Company, and the Nyassa Company. The budget for 1910–11 estimated the revenue at 5,418,332 milreis, and the expenditure at 5,118,832. A Governor-General administers the colony.

PORTUGUESE GUINEA. A Portuguese colony on the west coast of Africa, between Senegal and French Guinea. It includes the adjacent archipelago of Bijagoz with the island of Bolama, in which the capital (Bolama) is situated. Area, 13,940 square miles, carrying a population of about 820,000. Imports, 1908, 875,155 milreis, and exports, 492,238 milreis; an English source gives the trade for 1911 at £304,049 imports, and £187,962 exports. In 1912, 72 vessels, of 80,098 tons, were entered at the ports. The budget balanced for 1910–11 at 309,900 milreis. A Governor administers the colony.

POST, Charles William. American manufacturer and publicist, died May 9, 1914. He was born in Springfield, Ill., in 1854, and attended the University of Illinois, but did not graduate, and became in turn a hardware merchant, a commercial traveler, and manager of a plow factory. In 1881 his health broke down and he traveled for seven years during which period he studied medicine, hygiene, dietetics, and physiology in the United States and Europe. He made a special study of cereal foods, and as a result of these researches established a plant at Battle Creek, Mich., for the manufacture of prepared foods. Mr. Post was very active in his opposition to organized labor, and carried on for years a struggle against the American Federation of Labor, on the issue of the closed shop. He was for four years president of the National Manufacturers' Association, which was organized to combat certain of the policies of organized labor, and was chairman and director of many important industrial companies.

POSTAL SAVINGS BANKS. The following statistics of postal savings banks of the world were compiled in 1914 by the Bureau of Foreign and Domestic Commerce of the Department of Commerce, Washington, D. C. The growth of such banks in the decade 1902–04 to 1912–14 has been very notable. At the earlier period the total number of depositors was 29,067,000, while at the latter it was 52,386,000. At the former date the total deposits approximated $1,600,000,000, while at the latter they were $2,657,000,000. See also SAVINGS BANKS.

Austria	1918	2,800,407	40,297,296	17.52
Belgium	1912	2,572,212	175,491,072	68.23
Bulgaria	1911	312,462	8,797,965	28.16
Finland	1911	66,002	1,580,935	23.20
France	1912	6,187,208	886,898,799	54.45
Hungary	1912	836,148	21,988,784	26.29
Italy	1912	5,780,010	876,072,443	65.06
Netherlands	1912	1,607,016	71,016,088	44.19
Russia	1912	2,691,361	192,456,530	70.02
Sweden	1913	575,700	12,885,976	22.38
United Kingdom	1912	12,750,698	886,211,861	69.50
Bahamas	1912	2,180	127,478	58.47
Canada	1918	145,896	41,885,255	288.08
British Guiana	1912	27,184	1,121,796	41.27
Dutch Guiana	1912	10,649	858,658	88.21
British India	1912	1,500,884	61,318,176	40.85
Ceylon	1912	97,347	1,094,142	11.24
Straits Settlements.	1912	5,107	466,707	91.89
Dutch East Indies	1912	102,486	8,789,750	86.98
Japanese Empire	1913	12,584,748	96,495,896	7.67
Gold Coast	1912	3,857	187,785	48.67
Rhodesia, Southern	1912	4,788	599,882	124.85
Sierra Leone	1912	6,474	508,958	78.62
Union of South Africa	1912	248,110	27,424,486	110.58
Egypt	1913	282,401	3,176,757	11.25
Tunis	1912	5,546	1,504,448	271.27
New South Wales	1912	459,989	97,955,311	212.95
Queensland	1914	198,060	46,788,815	242.88
Tasmania	1914	31,382	4,062,488	129.45
Western Australia	1914	129,158	23,028,582	178.26
New Zealand	1912	432,199	79,471,196	183.88
Philippine Islands	1914	45,518	1,416,912	31.18
United States	1914	388,511	40,919,678	105.32

UNITED STATES. The Director of the Postal Savings System of the United States compiled the following data regarding postal savings deposits by States and Territories:

POST-IMPRESSIONISM. See PAINTING AND SCULPTURE.

POTASH. See FERTILIZERS.

POTATOES. The world's potato production during recent years has ranged from about 4¾ to nearly 6 billion bushels. Of the world's crop Germany, by far the leading potato-producing country, produces about 30 per cent. Russia, ranking next, produces about three-fourths the quantity produced by Germany, although a larger area is devoted to the crop. Austria-Hungary, ranking third, yields annually from 600 to 700 million bushels, and France, generally standing fourth, yields from 400 to over 500 million bushels yearly. The great preponderance of Germany in the production of potatoes is due to a more extensive consumption than in most other countries of the tubers as an article of food and their use in feeding stock, and for manufacturing purposes. As published by the United States Department of Commerce, the normal annual application of the crop in Germany is about as follows: Manufacture of spirits, 93,000,000 bushels; starch, 52,000,000; dried potatoes, 23,000,000; human consumption, 485,000,000; replanting, 224,000,000; and loss from decay and other causes, 149,000,000 bushels. In 1913, 460 potato-drying plants, of which 144 were coöperative, consumed over 23,000,000 bushels. The dried product is mostly used for feeding stock, but a potato meal is also produced which partly replaces the flour of wheat and other grains in baking. Germany relies largely upon her immense potato production to tide her over the crisis in her food and feed supply occasioned by the European War. It is pointed out that an increased per capita consumption of 100 kilograms of potatoes will affect all import requirements of bread grains.

The crop of 1914 as shown by data published by the International Institute of Agriculture was smaller in most countries than the crop of 1913, although the acreage was a little larger. The crop of the United Kingdom, estimated at 268,500,000 bushels, was 5 per cent below the crop of 1913, which was the largest on record. In Ireland the crop was about 10 per cent below that of 1913. The 1914 crop of Spain was estimated at 76,560,000 bushels, of Italy at 62,390,000 bushels, and of Germany at about 1,750,-

State	*Balances to credit of depositors June 30, 1913*	*Deposits during fiscal year*	*Deposits withdrawn during fiscal year*	*Balances to credit of depositors June 30, 1914*	*Balances on deposit in banks June 30, 1914*
Alabama	$95,578	$129,877	$110,560	$114,890	$111,697.74
Arizona	279,168	350,760	337,968	291,960	282,423.21
Arkansas	116,189	182,130	145,199	153,120	146,235.48
California	2,632,996	3,610,231	3,168,382	3,074,845	2,895,549.56
Colorado	896,331	1,013,616	798,224	1,112,223	1,046,457.33
Connecticut	435,363	824,285	575,810	683,838	660,412.49
Delaware	49,427	59,542	58,920	50,049	48,328.72
District of Columbia	166,535	292,878	195,430	263,978	212,429.17
Florida	154,314	303,754	245,584	212,584	208,631.92
Georgia	57,390	98,837	82,276	73,951	67,903.70
Hawaii	....	30,409	11,014	19,395	18,588.29
Idaho	318,937	333,009	363,500	388,446	
Illinois	2,862,889	3,427,173	2,693,592	3,596,470	3,321,358.65
Indiana	891,930	1,084,877	932,614	1,044,193	966,431.94
Iowa	303,780	357,783	316,773	344,790	324,761.64
Kansas	620,207	509,987	464,612	665,582	630,775.91
Kentucky	310,540	352,983	303,362	360,161	331,859.49
Louisiana	150,008	247,362	184,749	212,621	193,075.78
Maine	158,044	210,115	160,370	207,789	200,527.89
Maryland	77,989	94,074	76,587	95,426	89,046.80
Massachusetts	1,471,681	2,432,901	1,818,726	2,085,856	1,996,295.54
Michigan	1,145,745	1,809,838	1,471,862	1,483,721	1,411,627.64
Minnesota	1,467,106	1,417,059	1,375,802	1,508,363	1,444,448.70
Mississippi	85,615	158,214	90,994	152,835	138,056.75
Missouri	1,370,513	1,478,591	1,328,919	1,520,185	1,409,069.72

State	*Balances to credit of depositors June 30, 1918*	*Deposits during fiscal year*	*Deposits withdrawn during fiscal year*	*Balances to credit of depositors June 30, 1914*	*Balances on deposit in banks June 30, 1914*
Montana	$697,862	$815,994	$757,595	$755,761	$714,198.42
Nebraska	309,818	846,788	297,791	858,760	841,887.28
Nevada	836,027	488,541	487,201	882,867	862,988.29
New Hampshire	226,974	298,187	226,820	298,841	281,949.46
New Jersey	690,503	1,284,741	850,228	1,075,021	1,0
New Mexico	52,818	106,854	86,886	72,831	67,019.80
New York	5,009,854	9,088,088	6,504,658	7,598,289	7,190,951.89
North Carolina	87,112	46,941	44,275	39,778	85,256.51
North Dakota	87,508	47,915	47,678	87,745	85,528.92
Ohio	8,018,847	8,624,788	2,967,098	8,670,982	8,842,828.0v
Oklahoma	268,793	822,241	287,761	808,278	285,101.10
Oregon	1,215,906	1,614,274	1,488,691	1,841,489	1,292,882.77
Pennsylvania	1,934,587	8,818,055	2,481,169	8,266,478	8,091,061.68
Porto Rico	....	58,897	26,618	27,284	10,000.00
Rhode Island	244,554	421,628	807,944	858,283	845,969.80
South Carolina	18,154	26,788	19,019	20,923	18,587.50
South Dakota	58,990	68,553	61,828	60,715	57,655.07
Tennessee	195,621	294,688	238,755	251,554	288,884.71
Texas	510,917	707,520	660,491	557,946	535,808.19
Utah	180,170	206,517	184,638	152,049	146,528.60
Vermont	47,580	68,195	54,583	61,192	59,148.10
Virginia	165,289	218,478	182,608	196,159	185,182.58
Washington	1,486,610	1,770,906	1,657,668	1,599,858	1,542,442.44
West Virginia	80,429	149,097	108,885	121,141	114,857.88
Wisconsin	842,967	1,002,857	777,445	1,068,379	1,016,841.61
Wyoming	98,270	188,108	120,811	110,562	106,848.42
Total	88,818,870	47,815,249	88,189,848	48,444,271	40,919,678.31

000,000 bushels. The Canadian crop was 85,672,000 bushels, and the average yield for the entire dominion 180 bushels per acre, as compared with a yield of 78,544,000 bushels from 473,500 acres in 1913. The production of the United States is about one-fourth that of Germany, although the area in potatoes is nearly half of the German acreage. In 1914, the crop, as reported by the Department of Agriculture, amounted to 405,921,000 bushels from 3,708,000 acres, the average acre-yield being 109.5 bushels. The value of the crop, based on a bushel value of 48.9 cents, the average price received by farmers December 1, was $198,609,000. These figures compared with a production of 331,525,000 bushels, an area of 3,668,000 acres, an average yield of 90.4 bushels, and a total value of $227,903,000 in 1913. *American Agriculturist* reports New York the leading State, with a yield of 41,470,000 bushels, followed by Michigan with 39,790,000 bushels.

POTTER, FRANCES BOARDMAN (SQUIRE). An American educator and suffrage leader, died March 25, 1914. She was born in Elmira, N. Y., in 1867, and graduated from Elmira College in 1887, taking post-graduate courses in Cambridge University and at the University of Minnesota. After teaching in high schools, she became in 1901 instructor in Old English at the University of Minnesota, being appointed assistant professor of English in 1903, professor in 1907, and acting also as extension lecturer in the College of Education. She was active in the cause of woman suffrage, and in 1909 was corresponding secretary of the National American Woman Suffrage Association, as well as general lecturer of the National Woman's Trade Union League and lecturer for the General Federation of Women's Clubs. She was a member of the Modern Language Association of America, and economic and political associations. She was the author of *Germelshausen* (a play, 1904; collaboration), *The Ballingtons* (a novel, 1905), and *Jamieson* (a play, 1909). She contributed to magazines under the pen names of Frances Boardman and Frances Squire.

POTTER, WILLIAM BLEECKER. An American mining engineer, died July 14, 1914. He was born in Schenectady, N. Y., in 1846, the son of Bishop Horatio Potter. He graduated from Columbia University in 1866, and for the three years following studied at the School of Mines in that university, receiving the degree of E.M. in 1869, and in the same year was appointed assistant in geology at Columbia, serving until 1871. From 1871 to 1893 he was professor of mining and metallurgy at Washington University. He founded and became manager of the St. Louis Sampling and Testing Works; from 1872 to 1874 was assistant to the Missouri Geological Survey; and until 1873 acted as engineer and metallurgist for several large steel corporations and mining companies. He was a member of several mining and scientific societies, and in 1888 he was president of the American Institute of Mining Engineers.

POTTERY. See CLAY-WORKING INDUSTRIES.

POWER, ELECTRIC, TRANSMISSION OF. See ELECTRIC POWER, TRANSMISSION OF.

PRECIOUS STONES. See GEMS AND PRECIOUS STONES.

PRESBYTERIAN CHURCH. The total number of Presbyterian Church members in the United States in 1914, was 2,083,617, with 16,834 churches, and 14,066 ministers. There are four large and several smaller denominations under the Presbyterian system. The largest is the Presbyterian Church of the United States of America, known as the Northern Presbyterians, with 1,442,498 communicants, 10,019 churches, and 9413 ministers in 1914. The Presbyterian Church of the United States, known as the Southern Presbyterians, had, in 1914, 310,602 communicants, 3430 churches, and 1819 ministers. Other bodies, which are treated under their own titles, are the Cumberland Presbyterian Church, the United Presbyterian Church, and the Reform Presbyterian Church. A very small body is the Associate Presbyterian denomination, which numbered 786 communicants, 22 churches, and 12 ministers.

The Northern Presbyterian Church, officially known as the Presbyterian Church of the United States of America, is divided into 40 synods, with 295 presbyteries. The Sunday school members in 1914, numbered 1,318,628. The total contributions received for all purposes amounted to $27,681,970. Of this amount, $19,771,059 was for congregational purposes; $1,833,173 for home missions; $1,562,800 for foreign missions; and $614,441 for colleges. The chief governing body of the church is the General Assembly. The missionary work of the denomination is under control of the board of foreign missions and the board of home missions. There were, in 1914, 27 foreign missions, 165 stations, 1226 missionaries, 5766 native helpers, 728 fully organized churches, and 133,713 communicants. There were printed 95,105,452 pages of Christian truth in over 20 languages. Educational work of the denomination is in charge of the board of education. Other important boards are the board of publication and Sunday school work, the board of church erection, and the board of ministerial relief and sustentation. The denomination supports 11 theological seminaries, and many colleges and universities. In coöperation with the several synods, the board of education provides pastoral care and religious instruction for students in 27 State universities and colleges, where the number of Presbyterian students in 1914 was about 15,000.

The sessions of the General Assembly, in 1914, were begun in Chicago on May 21, with Maitland Alexander, D.D., LL.D., as moderator. Among the important acts of the assembly were the following: a resolution was adopted urging the reading of the Bible in public schools and other educational institutions; a plan of union between all Presbyterian Churches was approved; it was resolved that only ordained men can be appointed by the presbyteries, synods, and the General Assembly to serve on committees; the endowment of chairs of the English Bible in colleges was approved; the preparation of a programme for the observation of the 500th anniversary of the martyrdom of John Huss was recommended; the use of nonalcoholic wine in the Lord's Supper was recommended; it was decided that the finding of the judicial commission of a presbytery is the final judgment, and that a presbytery has no power to review the same. Resolutions disapproving all secular uses of the Sabbath day, and condemning Sunday newspapers and the white slave traffic were passed. It was decided that definite steps are to be taken by the presbyteries to provide adequate salaries for ministers. See also RELIGIOUS DENOMINATIONS AND MOVEMENTS.

PRICES. The movement of the general level of prices has attracted general interest for a number of years owing to its intimate relation with the increasing cost of living. The upward movement began in 1895 or 1896, and except for temporary recessions has been continuous ever since. *Bradstreet's* index number, which is the sum of the wholesale prices of 96 commodities, rose from an average of 5.9124 for the year 1896 to 9.0354 on Dec. 1, 1914. For some other years this index was as follows: 1900, 7.8839; 1905, 8.0987; 1906, 8.4176; 1907, 8.9045; 1908, 8.0094; 1909, 8.5153; 1910, 8.9881; 1911, 8.7132; 1912, 9.1867. Prices had risen continuously, though slightly, during the second half of 1913. The average for December of that year was 9.2290; for January, 1914, it had dropped to 8.8857. Thereafter it dropped steadily to 8.6220 for June, and thereafter rose to the maximum of 9.8495 on August 15, the highest ever recorded, and reflecting the effect of the European War. It dropped then rapidly to 8.8620 for the month of November. On Dec. 1, 1914, the general index was 1 per cent lower than one year previous, and 5.3 per cent lower than 2 years previous; it was, moreover, only 5 per cent higher than on Dec. 1, 1914.

WHOLESALE PRICES. *United States, 1860–1913. Bulletin No. 149* of the United States Bureau of Labor Statistics gave comparative wholesale prices since 1860, based on the average wholesale prices for the ten years 1890–99. These indexes were based on different numbers of commodities ranging from 127 to 261, since 1890 never less than 251. The index of 1860 was 141.0. It fell slightly the following year and then rose rapidly to 317.5 in 1864. The decline thereafter was continuous to 132.4 in 1879. The next four years were somewhat higher; but there was a continuous fall from 145.5 in 1882 to 89.7 in 1897, except for a slight wavering in the middle 80's. The index rose to 110.5 in 1900, 115.9 in 1905, and to 129.5 in 1907. A slight reaction in 1908 was followed by further advances to 131.6 in 1910; and a slight fall in 1911 was followed by subsequent advances to 135.2 in 1913. In other words, the average level of prices in 1913 was higher than at any previous date since 1883, but was lower than any year between 1860 and 1883, except the single year 1879; and less than half as high as in the later years of the Civil War.

CANADA. A report, *Wholesale Prices, Canada, 1913*, by the Department of Labor (Ottawa, 1913), showed that, as in the United States, wholesale prices had advanced almost continuously in Canada since 1897. There was a slight reaction following the panic of 1907. An index of 92.2 for 1897 was compared with 108.2 for 1900, 113.8 for 1905, 124.2 for 1910, and 135.5 for 1913. The recession of prices following 1907 was declared not to have lowered the cost of living to the same extent that it lowered general prices, since foodstuffs and clothing were less affected than other commodities. The total advance of individual articles over their lowest prices in the middle 90's ranged from 282.5 per cent for furs, 145.1 per cent for jute, 128.8 per cent for hides and tallow, and 119.4 per cent for animals and meats, to 13.4 per cent on implements, and 21.4 per cent on drugs and chemicals.

GREAT BRITAIN. The increase in prices in Great Britain, while only about two-thirds the increase in the United States, was nevertheless very marked during the same period. Thus the index of the London *Economist* stood at 88 on July 1, 1896; rose to 99 July 1, 1904; and to 121 July 1, 1907. It then dropped to 94 on Jan. 1, 1909. It thereafter rose almost continuously to 125 on Jan. 1, 1913. While prices rose in the early part of 1913, they fell during most of that year, the index on November 1 being 122. It continued to fall to 116 on July 1, 1914. Thereafter, owing to the effects of the European War, prices moved upward. This upward movement in England, as in Germany and France, was largely controlled by governmental action, the supplies of numerous commodities being subjected to official supervision. Comparable statistics were therefore not available, but estimates indicated that prices had risen 15 to 20 per cent in all of these countries. The American Consul General at Berlin estimated roughly the increase in Germany between August 1 and November 15 at 50 per cent for most articles of common household consumption.

CAUSES. There is still much speculation as to the causes of the rising price level, even after several years of discussion and a few notable public investigations. While scientific opinion is firm in the conviction that the enormous increase in the gold output of the world is the principal cause, and while opinion of the public has steadily drifted to the same position, nevertheless, current literature still gives credence to the following causes among others: Extravagance; the meteoric rise of the automobile industry; enormous increase of public expenditures; pure food laws and other regulations of industry; cold storage; the inefficiency of American farmers; greediness of middlemen; overcapitalization of American corporations; the unreasonable demands of trades unions; the shifting of the population to the cities, disturbing the normal proportion between producers and consumers of food products; the great increase in population concurrently with the disappearance of free public land; the tariff; monopolies and trusts. A careful analysis of all of these causes shows that while minor importance may be given to some of them, as for example the tariff and trusts as explaining a more rapid rise in the United States than abroad, nevertheless almost the only great cause operating throughout the world has been depreciation in the value of gold. Since prices are merely the ratios of the value of gold, which is the general standard of value, to the value of other things, a decrease in the value of gold would result in an increase of prices. A decrease in the value of gold has therefore taken place, otherwise prices would not have risen. This decrease may be explained by the remarkable increase in the world's production of gold. Preceding 1890 for many years the world's production had averaged about $100,000,000. It rose to nearly $200,000,000 in 1895; to $259,000,000 in 1900; to $378,000,000 in 1905; to $454,000,000 in 1910; and to $463,000,000 in 1913. The world's available supply of gold had increased from slightly above $4,000,000,000 in 1895, to more than $6,000,000,000 in 1905, and to $8,520,000,000 in 1913. While the world's demand for gold had also increased during this period there had been at least a partially compensating factor in the great expansion of banking and credit institutions, and credit instruments such as checks, drafts, and bills of exchange. It seems probable that these factors may continue to operate with a consequent continued increase in prices during many future years.

PRIMARIES, DIRECT. See ELECTORAL REFORM.

PRIMARY BATTERY. See ELECTRIC BATTERIES.

PRIMARY ELECTION LAWS. See ELECTORAL REFORM.

PRINCE EDWARD ISLAND. An insular province of the Dominion of Canada. Area, 2184 square miles, with a population (1911) of 93,728. The capital is Charlottetown, with (1911) 11,198 inhabitants. The province is administered by a Lieutenant-Governor, appointed by the Governor-General of Canada and acting through a responsible executive council. There is a unicameral legislative assembly of 30 elected members. The Lieutenant-Governor in 1914 was Benjamin Rogers, appointed June 1, 1910. President of the executive council in 1914, J. A. Matheson. See CANADA.

PRINCETON UNIVERSITY. The total enrollment in all departments of the university in the autumn of 1914 was 1641, divided as follows: Undergraduate department, including candidates for A.B., Litt.B., and B.S., 1327; civil engineering, 128; school of electrical engineering, 11; graduate school, 175. The faculty numbered 204. Among the additions to the faculty during the year were the following: Alan Wilfred Cranbrook Menzies, Ph.D., formerly professor at Oberlin College, professor of chemistry; Alfred Noyes, M.A., was elected visiting professor of English literature on the Murray Foundation; Frank Henry Constant, formerly at the University of Minnesota, was elected professor of civil engineering and head of the department of civil engineering; Prof. Charles McMillan, formerly head of the department of civil engineering, retired, and was elected professor emeritus. Temporary appointments for 1914 include Prof. George Herbert Palmer of Harvard University, lecturer on ethics; Prof. Chanfant Robinson of Yale University, visiting professor of mediæval history; Prof. Westel Woodbury Willoughby of Johns Hopkins University, lecturer on jurisprudence and politics, replacing Prof. W. F. Willoughby, who was granted leave of absence to accept the appointment as constitutional adviser to the President of the Chinese Republic.

The most noteworthy benefaction received by the university during the year was the Palmer Memorial Stadium, given by Edgar Palmer, at a cost of $300,000, in memory of his father, the late S. S. Palmer. The terms of the gift are such that the university receives an income of $10,000 a year in the form of rent from the Athletic Association. The productive funds, according to the latest report, amount to $5,327,535, providing an income of $242,263. The library contains about 320,800 volumes. The president is John Grier Hibben, Ph.D., D.D.

PRISON REFORM. See PENOLOGY.

PRISONS. See PENOLOGY.

PRIVATE BANKS. In 1914 the Comptroller of the Currency received reports from 1064 private banks. These are most numerous in the Middle Western States, which comprised 76 per cent of those reporting. There were 811 in the Middle Western States; 88 in the Eastern States; 78 in the Western States; 73 in the Southern States; and 14 in the Pacific States. Illinois alone reported 226; Ohio, 196; and Indiana, 189. Their aggregate capital was only $21,101,000. Their loans and discounts totaled $123,189,000; and their deposits were $145,848,000.

PRIVATE BANK FAILURES. Early in January was reported the failure of the department stores promoted by Henry Siegel and Frank Vogel, New York merchants. In connection with their stores they solicited savings deposits upon which they agreed to pay 4½ per cent interest. They secured nearly 15,000 depositors who had $2,550,000 to their credit at the time of the failure. To offset this was $15,000 in cash, a $1000 bond held by the State Comptroller at Albany, and $24,000 due as balances. These deposits had been used by the managers in loans to the several department stores in New York and Boston. Superintendents of the State Banking Department had strongly urged supervision of such banks. The Van Tuyl Commission (see BANKS AND BANKING) made an extensive investigation of the Siegel failure. Their recommendations were embodied in bills before the State Legislature providing for the supervision and examination, and the requirement of ample reserves and guarantees from all private banks. It was reported that $150,000 had been contributed by private bankers to oppose these bills, but passage was secured. Mr. Henry Siegel was tried at Geneseo, N. Y., on one of fourteen indictments and convicted of securing sums from various banks on false statements. He was sentenced to ten months in prison and a fine of $1000. The execution of the prison sentence was postponed until June, 1915, on condition that meanwhile he repay the bulk of the deposits in his bank.

Among the notable bank failures of the year were eight banks in which former Senator Lorimer was the leading spirit. These banks held considerable amounts of the savings of the poor; and were favored with more than $1,000,000 of the funds of the City of Chicago. It was understood that they loaned extensively to Messrs. Lorimer and Munday for various enterprises. Examination developed the fact that a State bank examiner had recommended that these banks be closed six months before they actually failed. Messrs. Lorimer, Munday, and others were indicted in the Federal and State courts for misapplication of funds. In November Mr. Lorimer pleaded not guilty. The case was pending at the close of the year.

PROBATION. See PENOLOGY.

PROHIBITION. See LIQUOR REGULATION.

PROSTITUTION. Considerably less attention was given to the social evil in 1914 than in the preceding year. In Chicago the needs of young girl sex-offenders had resulted in 1913 in the appointment of a woman judge in the girls' division of the juvenile court; this was followed by the appointment in St. Louis in 1914 of two women assistant judges in the juvenile court to hear girls' cases. Legislation in California in 1913 had included the Red Light Abatement Law making property owners of disorderly houses responsible. The law would have been effective in August, but was held up by the property owners and submitted to the referendum in the November election, when it was approved. In New York City various white slave films given in certain picture houses provoked an extensive discussion with arguments for and against. The preponderance of opinion seemed to be opposed to such moving pictures. Investigations were carried on in Hartford, Little Rock, Syracuse, and Massachusetts. See *Bibliography* below.

The Bureau of Social Hygiene, organized in 1912 by John D. Rockefeller, Jr., continued its scientific inquiry at its laboratory in connection with the New York State Reformatory for Women at Bedford. This bureau had also undertaken an investigation of commercialized vice in New York, the United States, and European countries. Mr. Abraham Flexner published in *Prostitution in Europe* the results of inquiries in the principal cities in England, Scotland, France, Italy, Belgium, Switzerland, Holland, Denmark, Norway, Sweden, and Austria. He viewed the social evil from numerous standpoints, as legislation, demand, supply, methods of regulation, and limitation. Excluding all forms of illicit intercourse except promiscuity for pay he found that prostitution existed throughout Europe. He believed it to rest in part upon the Old World tradition which holds woman inferior, an estimate in which she herself acquiesces. The supply of prostitutes was found to come mainly from the unmarried members of the lower working classes—for the most part girls away from home. Of 168 girls in a London house, 85 were born elsewhere. Of 12,-707 inscribed prostitutes in Paris, two-thirds were born outside the Department of the Seine. The causes set down by Mr. Flexner included defective mentality, broken homes or no homes, poverty, congestion, and evil associations. Fallen women are not, according to the study, very often innately vicious, and consequently by removing causes, reform and social reconstruction may begin. Hopeful signs were found in the fact that more than one-half abandon immoral lives, and that there is a strong sentiment favorable to a single standard of morality. Legislation is becoming constructive; and there is nearly everywhere opposition to the publication and display of books, pictures, and plays of a vicious character. The study showed that Denmark, Norway, and England have already abandoned the idea of regulation, as have also 48 of the 162 German cities. Commissions in France and Sweden recommended similar action. Among the remedies suggested were education, social uplift, the abandonment of regulation and segregation, and above all the removal of basic causes.

Under the Mann White Slave Act there had been 4434 cases tried in the United States from the passage of the act in 1912 to Dec. 1, 1914. Of these 901 had resulted in conviction.

WISCONSIN. An anti-vice committee of the Wisconsin Legislature after 15 months' investigation submitted its report on December 5. It found the chief cause of commercialized vice in the use of intoxicants. Among contributory causes it included public dance halls, road houses, poorly lighted parks and public places, lack of responsibility among parents, nonenforcement of laws, lack of public amusement and recreation facilities, and automobiles. It did not think low wages had any importance as a cause. Among its recommendations were: that a State law applying to towns and cities, as the Mann Act applies to States, be enacted; that a permanent State morals police department be created; that the sale of liquor at dance halls be prohibited; that all hotels, rooming and lodging houses be required to secure licenses, to keep permanent registers, and to state on their fronts the names of owners; that the age of consent be raised from 14 years for any and 18 years for chaste females to 18 and 21 years, respectively; that an industrial home and hospital be created for immoral women; that cities be required to provide special classes, and if needed also books, meals, and clothing for subnormal children in order to make compulsory education effective; that cities develop social centres and supervised amusements; that male patrons be not fined, but sentenced to a term in prison.

NATIONAL CONFERENCE. The section on Social Hygiene of the National Conference of Charities and Correction at Memphis in May gave chief attention to prostitution. The almost universal sentiment favored a policy of steady repression of the evil; condemned the policy of segregation; demanded the education of the adult public; instruction of parents and teachers in facts of social hygiene; favored the segregation of the feeble-minded, medical diagnosis for venereal diseases, and the study and control of environmental factors. Mrs. John M. Glenn included among such factors the following: Failure of the family to adequately protect its more adventurous members; superior attractiveness of street to home; meagreness of education for home-making; effects of immigration in destroying traditional sanctions for conduct; ignorance of the laws of sex; faithlessness to family vows; demoralizing work conditions; low pay; broken homes; feeble-mindedness; ease with which centres of pauperism and crime are allowed to breed their kind in both city and country. The committee on Social Hygiene stated that every one of the 14 vice reports thus far made in the United States had favored the policy of repression and opposed the segregated vice district. A plan for developing agencies having in view the reduction in the sources of supply and demand for prostitutes was advocated. Rabbi Berkowitz showed the need of sane sex education and the evils attending various unwise methods of spreading and exploiting sex information. Other topics were social hygiene exhibits by Dr. William F. Snow of the American Social Hygiene Association; the work of the committee of 14 in suppressing disorderly hotels in New York by Frederick H. Whitin; treatment of offenders before trial, by Zenas Potter; and corrective institutions by Mrs. Martha P. Falconer of Sleighton Farm, Darlington, Pa.

Bibliography. Hartford Vice Commission, *Report;* Little Rock (Ark.) Vice Commission, *Report;* Syracuse Moral Survey Committee, *Social Evil in Syracuse;* Jane Addams, *New Conscience and an Ancient Evil;* V. Brooks, *Little Lost Sister;* Massachusetts Commission for Investigation of the White Slave Traffic, *Report;* C. G. Roe, *Girl Who Disappeared;* A. W. Elliott, *Cause of the Social Evil and the Remedy;* Havelock Ellis, *Analysis of the Sexual Impulse.*

PROTESTANT EPISCOPAL CHURCH. The total number of communicants in this denomination in the United States in 1914, was 1,015,248, an increase of 28,641 over 1913. The total number in the Church, throughout the world, was 1,032,637, an increase of 28,420 over the previous year. In the Sunday schools, in the United States, were enrolled 51,501 teachers and 455,251 scholars. The total contributions of the denomination for all purposes, during the year, were $19,736,577. The denomination is divided into 91 dioceses in the United States, each of which is presided over by a bishop. In addition, there are 12 dioceses in foreign countries. The missions of the denomination are in charge of the Domestic and Foreign Mission Society. The net appropriations made for missions, during the year, were $1,047,312, an increase of $28,225 over the previous year. The Church lost by death during the year, seven of its bishops: Bishop Strange, of East Carolina; Bishop Niles, of New Hampshire; Bishop Scarborough, of New Jersey; Bishop Scadding, of Oregon; Bishop Penick, formerly of Cape Palmas, West Africa; Bishop Robinson, of Nevada; and Bishop Spalding, of Utah. The bishops elected during the year, were William Cabell Brown, bishop coadjutor of Virginia; John Poyntz Tyler, missionary bishop of North Dakota; William Theodotus Capers, bishop coadjutor of West Texas; Paul Matthews, bishop of New Jersey; Frank Du Moulin, bishop coadjutor of Ohio; William Frederick Faber, bishop coadjutor of Montana; Walter Taylor Sumner, bishop of Oregon. Richard Henry Nelson, bishop coadjutor of Albany, entered upon the bishopric of the diocese at the death of Bishop Doane, May 17, 1913, and he was enthroned Nov. 18, 1913. Charles B. Colmore was consecrated missionary bishop of Porto Rico, Dec. 17, 1913. Frederick B. Howden, elected missionary bishop of New Mexico at the General Convention in 1913, was consecrated Jan. 14, 1914.

Work in connection with the World Conference on Faith and Order was vigorously carried on in 1914. Commissions thereon have been authorized by 49 communions in North and South America, Asia, Europe, Africa, and Australia. Practically all the Protestant Communions in English-speaking countries, as well as the Old Catholic Churches of Europe, have given their aid to this movement. Eminent Russian ecclesiastics have also promised their coöperation; and some well-known Roman Catholic dignitaries have also expressed interest in the cause. A deputation, consisting of the Bishop of Chicago, the Bishop of Connecticut, the Bishop of Pennsylvania, Rev. Dr. William T. Manning, and Dr. John R. Mott, proceeded to England, but high expectations of success, which had been justly formed by reason of promised coöperation in Europe, could not be realized on account of the outbreak of the European War. Plans for the Conference were suspended. The enactment of the rule on Provinces, by the General Convention of 1913, resulted in combining into fewer and more efficient organizations, several branches of church work—missionary, educational, and social service—which had hitherto been done by a large number of separate departments. The first Province to be organized was the Province of the Southwest. All the dioceses, with the exception of Alabama, Duluth, Easton, and West Virginia, accepted the provincial system. The educational interests of the denomination are in charge of the General Board of Religious Education. In 1914, educational organization and teacher training were made prominent. Three departments of parochial education, collegiate education, and theological education, were created. Teacher training was advanced by the organization of schools of religious instruction in St. Louis, Chicago, Milwaukee, Cincinnati, Detroit, Rochester, Newark, New York, and Massachusetts. The Joint Commission on Social Service, besides coöperating with various church agencies, took a practical part in investigating the Paterson (N. J.) strike of 1913, by participating therein, with the commission appointed by the Federal Council of the Church of Christ in America. Special committees were also appointed to investigate prison labor and social insurance. See also RELIGIOUS DENOMINATIONS AND MOVEMENTS.

PRUSSIA. See GERMANY.

PRZEMYSL, INVESTMENTS OF. See WAR OF THE NATIONS.

PSYCHIATRY. See INSANITY.

PSYCHIC RESEARCH. In two of the more important volumes written in this field during the year (*On the Cosmic Relations*), Henry

Holt has brought together a vast amount of data designed to show that there is no lack of evidence for the belief in the "universe of the unknown." "Cosmic relations" is defined as "a brief term for the interactions between Soul and Universe." These interactions, if successful, are productive of happiness which "is the only known justification of the existence of either soul or universe" (p. 4). The cosmos is taken to consist "of the soul and the universe external to it." The first book presents such a "sketch of evolution as may impress, more than abstract statements can, a living consciousness of the existence of the universe beyond our knowledge." Book II gives "some account of a mass of phenomena which of late have fitfully emerged from the unknown." These phenomena science has thus far neglected, but Holt attempts (in Book III) to correlate them in terms of a "universal mind" or "cosmic soul," on the ground that if we have been endowed with telekinesis, the exertion of power at a distance by means unusual, and with telepsychosis, the communication between minds through unusual channels, we can certainly believe the evidence which comes from these sources, because, as a rule, "we are not entrusted with dangerous tools before we learn how to use them" (p. 935). Holt contends, with a good deal of competence, for the existence of mind after death. *Adventurings in the Psychical* is the title of a book by H. A. Bruce in which is given a narrative account of various personal experiences and experiments, designed to prove that there are phenomena which science does not yet adequately explain. Although Sir William Crookes did attempt to interpret these facts in terms of Roentgen rays, Sir Oliver Lodge and others claimed that the cause was nonphysical. Just now there is a tendency to explain the phenomena of ghosts, crystal gazing, automatic writing, and cross correspondence (*v.* YEAR BOOK, 1913, 574) as manifestations of dissociated and submerged "subconscious" perceptions. The question that is still to be answered is: "Under what conditions do these 'perceptions' emerge?"

In spite of meagre endowments, the American Society has maintained its high level of research and has continued the publication not only of its monthly *Journal*, but also of its more elaborate *Proceedings*. Since the dissolution of the American branch of the British Society in 1905 (*v.* YEAR BOOK, 1907, 657) the financial support of the organization has not been encouraging, but a more ample fund will hereafter be available. Already is announced a donation to meet the expense of an assistantship to which E. W. Friend, M.A. (Harvard), formerly a fellow in classics and Indic philology from Harvard at the University of Berlin, has been appointed. Early in the year J. H. Hyslop reported (*Journal*, viii, 28) his investigation of Beulah Miller, whose ability as a mind-reader the newspapers of the country proclaimed, and H. Münsterberg disproved. Hyslop thinks it unlikely that a code of signals between child, mother, and sister was used because the persons concerned were plainly not clever enough to follow the intricate code that the circumstances would have demanded. While there was no direct evidence for telepathy, the investigator did get some evidence of automatic writing. In addition to a group of incidental and personal experiences, the most significant investigations reported (*Proceedings*, viii, 1) deal with the telepathic and telæsthetic communications of Mrs. Canton in a series of experiments conducted by H. A. Burr. P. F. Hall's summary shows the scientific conservatism with which the society accepts its data (*ib.*, 151): "In the absence of evidence that certain observations were made, certain precautions taken, or certain statements verified, we have to assume that they were not; otherwise we do not know with what we are dealing. . . . For the reasons given above, I am obliged to say that, although Mr. Burr's report is very interesting, it seems to me impossible to draw any definite conclusions from it."

The work of the British Society again centres about correspondences which tend to indicate either (1) the unusual transference of thought from individual to individual, or (2) the attempt of the living to obtain messages from the deceased. A novel experiment in thought-transference of the first type was performed by the Misses C. Miles and H. Ramsden (*Proceedings*, xxvii, 279) in which simultaneously written postcards were compared for similar references of thought. A number of such occurrences were found in the series. One of the characteristics of automatic correspondence of the second type is that it is often incoherent and sometimes even illegible. But in the scripts of Mrs. Verrall, Mrs. Holland, and Mrs. Piper, Miss A. Johnson points out (*ib.*, 1) that isolated passages from standard literature are just as incoherent as are these automatic scripts, and that the obscurity of the meaning may be explained on the assumption that the author deliberately intends thereby to conceal his identity. G. W. Balfour points to evidence in the correspondence of Mrs. Willett (*ib.*, 221) that Dr. Verrall was actually revealed to her. M. A. Bayfield (*ib.*, 244, 318) explains the phenomena on the grounds of subconscious communication.

A noteworthy event of the year was the election of F. C. S. Schiller of Oxford University to the presidency of the British Society. In his inaugural address (*ib.*, 191) Dr. Schiller laid weight upon a matter which H. Bergson had considered upon a similar occasion; namely, that the nonexperimental, historical approach to psychic phenomena is the only adequate means at hand for their envisagement, inasmuch as (1) immaterialized souls are not interested in us, (2) they are beyond our control, and (3) we have scarcely sufficient control over our own psychic forces. After discussing the ambiguity of the term "reality," he makes a plea (*ib.*, 219) for the concept of "the individual soul which science seemed to abstract from and philosophy despised. [The soul] is after all the principle of unity and order, because it is the only available agency of selection. It stands at the core and centre of the cosmos and occupies the sole point at which all the various sorts of reality intersect, the sole position from which they can be controlled and unified."

E. C. Sanford (*Am. J. of Psych.*, xxv, 1) shows the likeness of problems presented in the realm of psychic phenomena to those connected with the "intelligent" or "calculating" horses of Elberfeld. He suggests "that perhaps the delicate responsiveness of horses and dogs offers us a means of bringing some of the mediumistic phenomena into the laboratory in manageable fashion." L. T. Troland proposes (*J. of Abn. Psych.*, viii, 405) with a similar intent, to apply the methods of psychoanalysis to the problems of psychic research.

PSYCHOLOGICAL ASSOCIATION, AMERICAN. See PSYCHOLOGY, *Meetings*, and *passim*.

PSYCHOLOGY. MEETINGS AND GENERAL NEWS. The annual meetings of the American Psychological Association and the Southern Society for Philosophy and Psychology were conjointly held at the University of Pennsylvania, Philadelphia, on December 29–31. R. S. Woodworth gave the presidential address for the American Association on "A Revision of Imageless Thought." The 11th annual conference of Experimental Psychologists took place at Columbia University, New York City, on April 9th and 10th. The 6th Congress for Experimental Psychology was held at the University of Göttingen on April 15–18, and the International Congress of Neurology, Psychiatry, and Psychology was to have been held at Bern on September 7–12, but of this we have no further news. Early in the year, fire destroyed the building which contained the psychological laboratory of Wellesley College. Almost all of the apparatus and experimental records were either damaged or entirely lost. In honor of the completion of his 25th year as Professor of Psychology, the former students of J. McK. Cattell tendered him a memorial *Festschrift* which contains a series of essays on Professor Cattell's contributions to the problems of the reaction-time, of reading and perception, of the associative method, of psychophysics, of relative statistical position, and of individual differences. Several new serials and periodicals are under way: some of them have already appeared. W. Peters, of Würzburg, edits *Das Zentralblatt für Psychologie und psychologische Pädagogik*, in which summaries of articles and treatises are published. A. Adler and C. Furtmüller, of Vienna, have issued the first number of *Die Zeitschrift für Individualpsychologie*, while F. Krüger, of Halle, is editing a series of studies in genetic, ethnic, animal, and child psychology under the title, *Arbeiten zur Entwicklungspsychologie*. The second number, appearing before the first, contains a study by H. Volkelt on the *Ideational Processes of Animals*. There is news of an *Archiv für Religionspsychologie*, edited by Herren Stählin and Koffka and published from Tübingen, and also of an *Année psychologique polonaise*, from Warsaw. To meet the needs of an increased supply of articles on psychological subjects, the editor has proposed the exclusive assignment of theoretical papers to the *Psychological Review*, and the organization of a new bimonthly *Journal of Experimental Psychology* for investigational articles. After the death of A. H. Pierce, former editor of the *Psychological Bulletin*, S. I. Franz, of Washington, D. C., was put in charge of that publication.

The death-toll for the year was unusually heavy. Mention has been made of the death of A. H. Pierce, whose publications were chiefly concerned with the subjects of space perception, attention, and the subconscious. E. B. Huey was known for his work in the field of reading and of mental deficiency; Miss T. L. Smith, for her contributions to the literature of child-psychology; G. E. Dürr, for his treatises on attention and epistemology, and for his revision of two of Ebbinghaus's principal works; T. Lipps, for his systematic treatises on general psychology, æsthetics, and the higher mental functions; L. Hermann, and H. Kronecker, for their physiological contributions to psychology.

GENERAL BOOKS AND TREATISES. The current year has been unusually productive of textbooks and general works. Among the textbooks, there is a marked tendency to make the subject-matter and scope of psychology less abstract by introducing the purposes and the aims of the individual in terms of appreciation and value. One of the best examples of this tendency is H. Münsterberg's *Psychology, General and Applied*. The realm of psychology is demarcated, in this work, by two sharply defined attitudes toward mind: (1) mental content may be explained in terms of a causally related objective series of events, or (2) mental processes may be valued and understood in terms of a purposive, subjective self. In Book I are discussed problems which arise from the assumption of the first attitude: the scope and methods of causal psychology, the elementary and complex processes of the individual and of the group, and the interpretation of these from the point of view of a causally related series. In Book II these divisions are followed into the realm of purposive psychology; the concepts of soul, meaning, creation, and social activities are analyzed. And, finally, in Book III, both of these types of psychology are traced through their more evident applications in education, law, economics, medicine, and general culture, but in all of these applications purposive psychology appears in a minor—not to say ambiguous—rôle. The same endeavor to make psychology less removed from the issues of a purposive world appears in R. M. Ogden's *An Introduction to General Psychology*, in which the author has aimed to meet the "demands of the average student beginner a little more adequately than has been done hitherto," by enabling him, "on the one hand, to connect his psychology with everyday life, and, on the other, to apprehend the bearings of this science upon philosophy, education, sociology, and biology." The author rejects "the science of behavior in this narrower sense" (*v.* YEAR BOOK, 1913, 576), but follows the trend toward a purposive psychology. In addition to the usual captions there are chapters on character, and personality, with its derangements, and sections on dreams, hypnosis, and telepathy. A notable feature of the book is its support of imageless thought and its treatment of recent results in audition. Another attempt to rehabilitate the purposive soul is to be found in W. Wundt's *Die sinnliche und uebersinnliche Welt*. The author describes the various world-realities of the naïve mind, the physicist, the psychologist, and the moralist, and he suggests that these may be unified in the ethical ideals of Christianity, which has passed, in its development, through the stages of mythology, symbolism, and philosophical interpretation. It is significant, in this connection, that the textbook which has recently stood for the most energetic interpretation of the self on the basis of its aims and purposes, has already passed into its fourth revision since the first edition of 1909. In the new edition of M. W. Calkin's *A First Book in Psychology*, the bibliography of former issues is continued to the present time, and several textual changes of importance are made. The subject of the fluctuation of attention is omitted; but new classifications of attention, conception, and emotion are introduced. A new edition of D. R. Major's *The Elements of Psychology* has appeared with slight rewording and additions. The second edition of C. S. Myers's *Text Book of Experimental Psychology* has this year been reprinted without change. In a manual of *Psychological Experiments*, J. V. Breitwieser has written out in abbreviated form a series of simple experiments which can be performed without the aid of expensive or elaborate apparatus. H. L. Hollingworth has contributed an *Outlines for Experimental Psychology*.

The bearing of psychology on social ideals is brought out in H. Münsterberg's *Psychology and Social Sanity*. Among the issues which receive attention are those that centre about sex-education and the dance, the evils connected with advertising and with schemes of investment, Socialism, the efficiency of the jury and of the farm, and the dangers underlying belief in telepathy. His *Grundzüge der Psychotechnik* is a more serious estimation of the service which psychology may render to commerce and culture. In systematic criticism, the author traces out in some detail the problems, premises, and influences of applied psychology in connection with the demands of society, of health, of industry, of justice, of education, of art, and of science. It embodies the first deliberate attempt to define, on theoretical grounds, the boundaries of application.

B. Sidis's large volume on *The Foundations of Normal and Abnormal Psychology* may be classed either with "general treatises," or with the psychopathic works. It succeeds better than do most books which treat of the abnormal in laying a consistent and reasoned foundation within general psychology. It is especially to be commended for its serious attempt to lay down laws of mental synthesis and organization. The appearance during the year of a new edition of C. B. Burr's *A Handbook of Psychology and Mental Disease* illustrates the current demand made by physicians and alienists for an appropriate psychology of the abnormal. In the case of the *Handbook*, the description of disorders is more heartily to be commended than are the psychological foundations. Students of the psychology of religion will make good use of the extensive bibliography (over 1000 titles) collected by G. Berguer in the *Archives de psychologie* (xiv, 52). In *Behavior: An Introduction to Comparative Psychology*, J. B. Watson has swept together a large amount of experimental material bearing upon the minds and the performances of animals. The large volume on *Principes de psychologie biologique* (French translation, 1914), by José Ingenieros of the University of Buenos Aires, is a genetic treatise which includes comparative, social, and individual psychology. It rejects "Wundtism" and "Bergsonism," and it is ambitious to erect instead of these "a natural science conformable to the most general hypotheses of scientific philosophy." The first volume (*The Senses of Invertebrates*) of a large work on animal psychology, *Einführung in die Tierpsychologie*, by G. Kafka, appeared during the year. The lively interest manifested by philosophy in the definition of mind is illustrated by E. B. Holt's book entitled *The Concept of Consciousness*. The definition proposed, which "is in no small part inspired by the radical empiricism of Professor James," runs as follows: "the consciousness that depends on any given living organism is the sum total of all neutral entities [not mental or physical 'substances'], to which that living organism responds." In accordance with this definition, psychology is described as "primarily the science of response."

SENSATION AND PERCEPTION. *General.* In a study (*Arch. f. d. gesam. Psychol.*, xxxii, 68), which seeks to reveal the criteria that make for objective reference in sense-impressions, A. Berliner comes to the conclusion that the criteria are not always reliable and that confusion frequently occurs. L. T. Troland (*Am. J. of Psych.*, xxv, 500) makes a mathematical modification of the Hering theory of vision which meets many of the objections to that theory and serves as well to explain adaptation in the sense-departments of temperature and taste.

Vision. K. Lohnert has found (*Psychol. Stud.*, ix, 147) that the apprehension of rectangular geometrical figures depends in part upon a factor of satisfactory absolute size which begins to show its influence when a variable rectangle is adjusted by an observer to a standard rectangular figure in a long series of comparisons. P. Schwirtz (*Arch f. d. gesam. Psychol.* xxxii, 339) tested the Müller-Lyer illusion under hypnosis and concluded that the effect was not due to associations because these had been inhibited by suggestion, nor to any other conscious processes, nor to physiological functions in the retina of the eye, but to physiological conditions in the central nervous system. V. Benussi, however (*ib.*, 396), explains illusory perceptions in general—and among them the Müller-Lyer—on the basis of ideated movements of parts. W. Wundt returns to the defense of his theory of assimilative completion under fixation and eye-movement (*Psychol. Stud.*, ix, 272). R. Dittler and Y. Sataki have given a valuable table of complementary lights derived from spectral beams and set down in terms of wave-length (*Zeitschr. f. Psychol.*, xlviii, 240). Their results, which depended upon the colorlessness in after image of their mixed pairs of complementaries, are introduced by a note written by E. Hering. There has, of late, been a strong tendency closely to limit color-vision in the animal kingdom; but F. W. Fröhlich (*ib.*, xlviii, 28, 354) interprets the dependence of response upon wave-length, found in certain cephalopods, to mean that different lights set up different color sensations; and W. F. Ewald (*ib.*, xlviii, 285), who worked with the water flea, *Daphnia pulex*, found evidence of dichromatic vision (red-green blindness) with maximal sensitivity to greenish-yellow and a complementary blue-violet. Ewald's important results confirm those of Frisch and Kupelwieser published last year, and they stand in line with Hering's theory of visual sensation. These recent investigations have sensibly advanced the doctrine of color vision.

Audition. C. E. Seashore describes (*Psych. Rev. Monographs*, lxix, 1) an improved form of the tonoscope, an instrument which directly determines the pitch of a singing voice or of an instrument. Experiments conducted with this instrument lead W. R. Miles to the following conclusions; (1) the human voice is about equally accurate, in terms of vibration, at all points well within its range, (2) vowel quality affects the accuracy of vocal reproduction, and (3) the average error of the voice in reproducing a tone given by a tuning fork is 1.5 vibrations for men at range 128 vibrations, and for women at 256 vibrations, in a representative group of students (*ib.*, 65). In a study of pitch discrimination, T. F. Vance (*ib.*, 115) obtained from 50 Obs. much larger liminal values than those of Luft and of Meyer. The same experimenter, working with large steel forks, obtained the values 12–15 vibrations, for the lowest audible tone (*ib.*, 104). The research brought out new stimulus conditions which probably bear upon the stimulus threshold. A convenient review of the definitions and theories of consonance has been made by H. T. Moore (*ib.*, lxxiii). Moore himself operates with the vague genetic concepts of "synthetising activity," "conflict," "equilibrium," "output of consciousness," and the like. Continuing his studies of auditory localization, C. S. Myers finds evidence for his belief that relative binaural intensities determine the left-right position of a source of sound whereas timbre and loudness place the sound with respect to a horizontal plane which should pass through the two ears (*Proc. Royal Soc.*, B, lxxxviii, 267). Assuming that the statements of K. Bücher and A. Nikisch are true when they allege the degeneration of rhythmic perception in the minds of musicians of to-day, A. Charon (*Arch. f. d. gesam. Psychol.*, xxxi, 274) gives directions for cultivating the disappearing sense of rhythm by making those appropriate movements in playing which will fit into the rhythmic responses of the bodily musculature. H. J. Watt has proposed to combine Helmholtz's principle of resonance with ter Kuile's areal analysis of stimulus to explain the facts of auditory sensation. The new conception better accounts for the phenomena of fusion than the old theories did (*Brit. J. of Psych.*, vii, 1).

Articulation. Stuttering has received attention this year in a monograph by A. Liebmann (*Vorlesungen über Sprachstörungen*), in which the writer emphasizes the need of psychological investigation of the defect, with special reference to the rôle of imagery; and an experimental investigation by J. M. Fletcher (*Am. J. of Psych.*, xxv, 201), as the result of which the author comes to the conclusion that stuttering is the consequence of a want of coördinated control in breathing, vocalization, and articulation.

PSYCHOPHYSICS. This subject appears in several ways to be coming again into its own. Renewed interest has been aroused by discussions concerning the relation which obtains between the mental and the physical (*v.* YEAR BOOK, 1913, 578–9). E. Minkowski (*Arch. f. d. gesam. Psychol.*, xxxi, 132), in a criticism of the doctrine of psychophysical parallelism, points out the fact that many of the theories advanced in psychology are not so much psychophysical as they are psychophysiological; but E. Hurwicz (*Arch. f. d. gesam. Psychol.*, xxxiii, 213) believes that the correlation must be sought in the fact that objects obtain their reference to the non-psychical through affective responses. There are a number of studies in psychophysics proper. C. Herfurth (*Psychol. Stud.*, ix, 220) has shown the constancy of median values with the temporal reversal of standard and variable series; F. M. Urban has drawn up new formulæ (*Arch. f. d. gesam. Psychol.*, xxxii, 456) for more accurate determination of liminal values on the basis of his system of psychometric functions, and S. W. Fernberger has made it appear that the extreme values in each series in the method of constant stimuli may be eliminated without seriously affecting the final result (*Am. J. of Psych.*, xxv, 121). Fernberger also warns the experimenter against assuming that the observer is following the *Aufgabe* without controlling this factor in order to avoid variability of results (*ib.*, 538). The prize of $100 recently offered for the best paper on the availability of Pearson's formulæ for psychophysics should tend to stimulate interest in this field.

MEMORY, LEARNING, ASSOCIATION, AND ATTENTION. G. Frings (*Arch. f. d. gesam. Psychol.*, xxx, 415) records the results of investigation in the field of associative inhibitions of two of the three varieties found by Müller and Pilzecker (1900) in their classical experiments on memory: (1) the effective or reproductive inhibition which prevents the appearance of two complexes whose associative tendencies with a third complex are equal, and (2) the generative or associative inhibition which tends to prevent the appearance of the third complex without the reproduction of the intervening second complex in the serial formation. Neither of these inhibitions is found, according to Frings, when the associations are normally formed, but they do affect reproduction when the associations have been loosely formed. (3) The third, "retroactive" inhibition of Müller and Pilzecker, according to which associative bonds tend to be dissolved by subsequent mental work, has again been made the subject of investigation. R. Heine, experimenting in Müller's laboratory at Göttingen, now finds (*Zeitschr. f. Psychol.*, lxviii, 161) that retroactive inhibition affects reproduction but not recognition. She explains the fact by the assumption that recognition of an object or word does not involve the reëstablishment of old associative bonds. The law itself seems to have been stated too broadly. It has been demonstrated only that *certain kinds* of mental function, notably those called out by memorizing, affect the subsequent reproduction of materials previously acquired. The relation of the phenomenon to "perseveration" and to the "set" of associative tendencies has not yet been made clear. Indeed, the very existence of the "perseverative tendency" has recently been called in question. W. S. Foster (*Am. J. of Psych.*, xxv, 393), whose scrutiny of the literature brought to light no less than four different uses in psychology of the term, declares that in his experiments, which were carried out by the Göttingen methods, he "met no facts which seem to make necessary the supposition of a tendency for an idea to arise without the probable coöperation of associative tendencies." Comparing the learning-methods of *reading* (i.e., reading over and over the matter to be committed to memory) and of *recital* (i.e., free rehearsal without the text), A. Kuhn discovered that pure reading, taken by itself, was almost worthless, and that, for most observers, recital was much more economical (*Zeitschr. f. Psychol.*, lxviii, 396). The difference rests mainly upon the organization of the material; a process that contains many factors. E. O. Finkenbinder finds (*Am. J. of Psych.*, xxv, 32) that the act of voluntary recall is usually characterized by two stages. The initial stage consists of an *Aufgabe* to recall and an act of "searching." "A second stage is characterized by imagery of various sorts, present in more or less profusion, and in greater or less degree of intensity, or vividness. . . . No recall of an affective state, of an attitude, of an *Aufgabe,* of steps in reasoning, or of a concept has been reported, except with images." In a review of the association method, S. C. Kohs (*ib.*, xxv, 544) finds that individuals differ mentally in terms of the grouping of associated complexes and that a psychological study of character should take these complexes into account. M. Scheinermann (*Arch. f. d. gesam. Psychol.*, xxxiii, 1), in a comprehensive investigation, analyzes the difference between a fatigued and an unfatigued mental condition in terms of the attentive state. The former shows feelings of passivity, indifference, narrow span of consciousness, and difficulty of apprehension, as against the opposites of these in the latter. In a study of adult methods of learning (taking the term "learning" in the sense of acquirement of performance), F. A. C. Perrin, who used various sorts of maze (*Psych. Rev. Monographs*, lxx), found the learning to be largely of the perceptual kind, which can neither be called "trial and error" nor "reasoning." Significant experimental evidence from children for the general effect on mental functions of specific drill (observing visual forms, figures, and the like) has been presented by K. Dallenbach (*J. of Educ. Psych.*, v, 321, 387). As the author remarks, this *looks* like "formal discipline." N. P. Hewins's historical and experimental research (*vide ib.*, v, 168) is a contribution to the same vexed problem. On the basis of experiments done with adults and children, C. Fox was convinced (*Brit. J. of Psych.*, vi, 420) that easy and unimpeded thinking is unfavorable to mental imagery, while delay and conflict are favorable to its arousal. Total abstinence from food for 31 days "had little effect upon the higher mental functions" of H. S. Langfeld's starving subject (*Psych. Rev. Monographs*, lxxi). The popular maxim "slow, but sure," receives slight support from researches (*ib.*, lxxii) which were carried out in order to ascertain whether persons who are deliberate in forming decisions and judgments are more likely to be correct and accurate than others. No correlation was discovered between (1) time and constancy in either logical or æsthetical judgments, and (2) time and accuracy in objective decisions. The neural conditions immediately underlying the higher mental complexes are almost wholly unknown. An hypothesis designed to make up, in part, for this deficiency,—an hypothesis based upon recognized physiological principles, clearly and definitely formulated,—makes clever use of incipient activities of the motor mechanisms of the brain (M. F. Washburn, *Psych. Rev.*, xxi, 376).

LANGUAGE. What is the best way to teach a foreign language? The question is at least as old as the practice of teaching modern "living" languages alongside the classics. L. Schlüter, working in the psychological institute at Göttingen and at Münster (*Zeitschr. f. Psychol.*, lxviii, 1), tried to subject to analysis and to a comparative test the older "translation" method, which uses the mother-tongue as the primary vehicle of instruction, and the "reformed" or "natural" method, which uses the foreign language in a similar way. In her experiments Miss Schlüter instructed her observers (nearly 20 adults) to translate into and out of foreign words and also to learn foreign names for objects presented. The two sorts of learning were carried on, day by day, in parallel series. She found that if foreign words are to be translated into native speech (as in translating a book), then it is more economical directly to associate the foreign and the native words than to learn from objects; but if the learner is subsequently to designate things by foreign words, then it is more economical not to associate the native to the foreign name of the object but at once to attach the new name to the object. There is an indication, therefore, that neither the older method of translation nor the newer method of presentation is to be preferred without qualification. The one seems to offer a better preparation for getting the meaning out of a foreign language when written, the other for conversation about objects and situations. In view of the greater directness claimed by the adherents of the "reformed" method, it is worth noting that when, in the experiments, the object was shown and the foreign name called for, the observer was very likely first to associate with the object the common designation in his mother-tongue and only then to give the foreign name. This process makes the "direct" method appear less direct than it is assumed to be. The author wisely refrains from wide generalization from her results. Before the whole problem of instructional methods in language can be settled a large number of such considerations as the use in practice of the language acquired, the kind and value of the mental training afforded, the age of the pupil, the preparation and experience of the instructor, must be carefully weighed; but it is an achievement so to have formulated the problem as to render it amenable to scientific approach. Thus far the research touches only the acquisition of a part of the vocabulary (nouns): it must go on to analyze the processes involved in the total integration of the sentence and of the paragraph. The methods of instruction in the languages are also considered in R. Wähmer's little book, *Spracherlernung und Sprachwissenschaft.*

THOUGHT, JUDGMENT, ACTION, AND EMOTION. Probably because of the logical doctrines advanced by E. G. Husserl, professor of philosophy at the University of Göttingen, and the bearing they have on psychological investigations (v. A. Messer, *Arch. f. d. gesam. Psychol.*, xxxii, 52, 281), a fresh attack on problems connected with thought and judgment has been made by the psychologists of Germany. An instance of this is to be found in a critical review by G. Anschütz of the late T. Lipps's doctrine of judgment, of which the second part has appeared during the year (*Arch. f. d. gesam. Psychol.*, xxx, 329). The review interprets judgment as simply the result of a voluntary effort to meet the demands made upon us by the objects of our environment.

It is important to note in these days of behaviorism that a physiologist of the reputation of W. B. Cannon should make the statement (*Am. J. of Psych.*, xxv, 256), "for reasons given above I agree with Sherrington's conclusion 'that the reverberation from the trunk, limbs, and viscera counts for relatively little, even in the primitive emotions of the dog, as compared with the cerebral reverberation to which is adjunct the psychical component of emotional reaction.'" R. Beck indicates, in a series of introspections (*Arch. f. d. gesam Psychol.*, xxxiii, 221), that consciousness attending imminent danger is at an extraordinarily high pitch of attention so that the experiences remain exceedingly vivid in memory for a number of years. E. B. Titchener (*Am. J. of Psych.*, xxv, 427) wonders at James's failure to notice the many historical anticipations of the James-Lange theory of emotion. G. S. Hall in "a synthetic genetic study of fear" (*ib.*, xxv, 149, 321) defines fear as "the anticipation of pain" and as an inhibition of "the will to live." He gives a list of 134 kinds of morbid fear.

A. Hammer has attacked the question of inhibition from the angle of the reaction experiment (*Psychol. Stud.*, ix, 321), and has shown that an inhibition set into operation by anticipative reactions previously executed has a progressive effect, in spite of renewed voluntary attempts to suppress the conflicting factor. See also PSYCHOTHERAPY.

PSYCHOLOGY, EXPERIMENTAL. See PSYCHOLOGY, *Meetings and General News*.

PSYCHOPHYSICS. See PSYCHOLOGY, under section *Psychophysics*.

PSYCHOTHERAPY. S. Freud's *Psychopathology of Everyday Life*, now translated into English by A. A. Brill, is an exceedingly clever attempt to discover, in the normal and the commonplace, mild forms of the same manifestations as appear in exaggerated measure in mental disorder. These mild manifestations Freud remarks in the slips and lapses of speech, memory, and action common to all persons. The explanation of these lapses, in terms of "repressions," serves to illuminate, in the manner characteristic of Freud, the symptoms observed in psychoneuroses. The doctrine of repression, as it is applied to lapses of memory, was made the subject of a symposium at Durham during July (*v. Brit. J. of Psych.*, vii, 139), and an attempt to interpret the alleged phenomena in terms of neural functions was made independently by W. Brown (*ib.*, vi, 265). An appeal made to *The Unconscious* to clarify psychological facts, normal and morbid, appears in M. Prince's book of this title. The author identifies the unconscious with the "neurograms" or neural dispositions, which are ultimately responsible, as he thinks, for the "fundamentals of human personality normal and abnormal." It is chiefly when the unconscious represents an *affective* residue of experiences (instincts and emotions), that the mental functions are disturbed. Another recent book about the unconscious, *La vie inconsciente et les mouvements*, has been written by the venerable Th. Ribot. Ribot maintains that "what persists [as the unconscious] is the kinæsthetic portion of the conscious states"; for "every state of consciousness is a complex of which the kinæsthetic elements form the stable and resistant part." Persons interested in the resemblances and differences between Freud's "psychoanalysis," and the "psychological analysis" of the French psychopathologists will find instructive P. Janet's articles on *La psycho-analyse* in the *Journal de psychologie* (xi, 1, 97) and in the *Journal of Abnormal Psychology* (ix, 1, 153). The journal last named continues to devote itself primarily to Freudian interpretations, although it did also contain, last year, a violent criticism of psychoanalysis, re-named by the critic "sexuoanalysis" (J. C. Haberman, *ib.*, ix, 265). The *Jahrbuch der Psychoanalyse* for the year (vol. vi), which will from this time be devoted exclusively to the advancement of "psychoanalytic science," contains four original articles, a lengthy and instructive history of the psychoanalytic movement (207), and a series of reports upon the work of the last five years. Helpful suggestions toward the discrimination of healthy and unsound "personalities" were made on the basis of "mental adjustment," by F. L. Wells (*Psych. Rev.*, xxi, 295).

PUBLIC BUILDINGS. See ARCHITECTURE.

PUBLIC DEBT. See articles on various countries.

PUBLIC HEALTH SERVICE, UNITED STATES. The annual report of the Surgeon-General for the year 1913 gave a résumé of the work of this bureau for the year and demonstrated the great extent and value of its activities. In the Philippine Islands, for example, not a single case of cholera occurred during the year, and only a few cases of plague. Of small-pox, which formerly killed 40,000 people in the islands, there were very few cases, and these among persons inaccessible to vaccination. Yellow fever did not appear. In continental United States some of the most important activities of the service were the field investigations of pellagra, trachoma, malaria, Rocky Mountain spotted fever, typhoid fever, tuberculosis, parasitic diseases, water pollution, sanitary administration, occupation hygiene, and school sanitation. Much of the work was done in coöperation with State health boards and included laboratory studies of many of the diseases cited. Other activities included the supervision of viruses and vaccines, serums and toxins, the manufacture and distribution of antirabic virus, and the enforcement of the white-phosphorus-match law. A goodly proportion of the work of the Public Health Service is in connection with quarantine and immigration services, an important function being the admission or exclusion of the feeble-minded and insane. See HYGIENE; PELLAGRA; VITAL STATISTICS.

PUBLIC LANDS. See CANADA, DOMINION OF; LANDS, PUBLIC.

PUBLIC SCHOOL ADMINISTRATION. See EDUCATION IN THE UNITED STATES.

PUGILISM. See BOXING.

PUGNO, RAOUL. French pianist, died Jan. 3, 1914. He was born in Paris, in 1853, and studied at the Conservatoire, winning there several prizes. His first studies were for organ playing, and at the age of 19 he became organist at the Church of St. Eugene, Paris, which post he continued to hold for 20 years. In 1874 he was chorus-master of the Théâtre Ventadour, and from 1893 to 1896 was a professor of harmony at the Conservatoire, later becoming first instructor in piano at that institution and holding that post until his retirement from all but private instruction. He was well known in the United States where he made several tours, the last being in 1912. After the retirement of Camille Saint-Saëns he was considered to be the foremost French pianist. His compositions were chiefly in the smaller forms, although he also wrote ballets, operas, operettas, and oratorios.

PUMPING MACHINERY. Some important units were put under construction during 1914. For the city of Philadelphia contracts were awarded for two 20,000,000-gallon steam turbine driven geared centrifugal pumps, to operate against a 330-foot head under a duty guarantee of 145,000,000 foot pounds per thousand pounds of steam. This was but one of the orders for such units in the hands of a large manufacturing company, which was also building two 24,000,000 imperial gallon pumps, designed for the Toronto water-works, to operate against a 268-foot head, and two 6,500,000-gallon pumps against a 273-foot head for San Antonio, Texas. These and other installations previously installed indicated that the centrifugal pumping engine already was a strong competitor of the older reciprocating pumping engine, notwithstanding the fact that it was only within the last 15 years that the centrifugal pump had been in operation against high heads. The products of Swiss and German designers were followed by mechanical engineers and pump builders in the United States, and improvements were added so as to secure increased efficiency. In combination with the steam turbine, as well as with the electric motor, the centrifugal pump illustrates again the advantages of a machine with a rotary over a reciprocating motion. During the year a number were installed at the various plants at the Plaquemine and Jefferson Drainage District of Louisiana, including four 76-inch, and one 48-inch, centrifugal pumps. The larger pump had a capacity of 168 gallons per minute at 1-foot head, and 40,000 gallons per minute against a head of 13 feet. These pumps were used to pump water back to the Mississippi River over a levee. A 100,000,000-gallon De Laval centrifugal pump was installed at Pittsburgh with a 48-inch outlet, designed to raise water against a total head of 56 feet.

Arrangements were made during the year for the construction of Humphrey gas pumps in the United States, and the first large American machine of this kind was installed near Del Rio, Texas, for irrigation purposes. This pump, which is of the general type described in previous issues of the YEAR BOOK, had a cylinder 66 inches in diameter and was supplied with gas by a 300-horsepower Akerlund down-draft producer, which used as fuel either soft coal or mesquite wood. This American Humphrey pump differs in design somewhat from the English original pattern, and the working parts have been standardized so as to secure parts available for pumps of different sizes; throughout the entire design the aim has been to secure high economy with simplicity, reliability, durability, and low cost of maintenance.

One of these Humphrey pumps, it is stated, can be put in full operation from the cold condition in less than a minute, and requires little skilled attention when once started. None of the heat and lubrication difficulties customary with the big gas engines are encountered, and the only possible mischances are stoppage from lack of water, gas, or ignition, all of which needs have been taken into consideration, and the means of supply duplicated. In connection with the Humphrey patents, those of W. H. Smyth of Berkeley, Cal., have been used, and he was the first inventor to raise water by the direct explosion of fuel gas in the United States.

During the year the Boston Public Works Department was building at Union, Park, and Albany Streets the largest automatic sewage pumping station in the world, with a total capacity of 151,000,000 gallons per day. Four pumps were installed, 3 having 36-inch suctions and 36-inch discharges, to deliver 30,000 gallons per minute, while 1 had a 26-inch suction and a 24-inch discharge, and could deliver 15,000 gallons per minute. The larger pumps were to be driven by 150-horsepower constant speed motors on a 440-volt circuit, and a small pump by a 75-horsepower motor. The automatic control was to be secured by a float actuating a multi-point switch, which would close five circuits consecutively with the change of elevation in the suction chamber.

PUMPS. See PUMPING MACHINERY.

PURDUE UNIVERSITY. A State institution for higher education, founded at Lafayette, Ind., in 1869. The total enrollment in all departments in the autumn of 1914 was 1978, and the faculty numbered 206. There were no notable changes during the year. The benefactions received amounted to about $50,000, and the productive funds amount to about $340,000. As the university is supported by appropriations from the State, there is little or no endowment. The library contains about 44,000 bound volumes and 30,000 pamphlets. The president is W. E. Stone.

PURPURA. See SERUM THERAPY.

QUAKERS. See FRIENDS.

QUALES, NILES THEODORE. An American physician, died at Chicago, May 23, 1914. He was born at Hardanger, Norway, in 1831, was educated in Norway and Denmark, and came to Chicago in 1859. He enlisted in the United States army in 1861, served during the Civil War, and at its conclusion entered Rush Medical College. He was first interne in the old Cook County Hospital, was city physician of Chicago, and director of the small-pox hospital during the small-pox epidemic of 1868–70, and was head of the United States Marine Hospital until the Chicago fire of 1871. He was president of the Scandinavian-American Medical Society (1894), and received the Norwegian decoration of the Order of St. Olaf (1910). He founded the Norwegian Old People's Home, Norwood Park, Chicago; and did much charitable work among the Norwegians of that city.

QUEBEC. A province of the Dominion of Canada. Area, 351,873 square miles, with a population (1911) of 2,003,232. Area, including that portion of the Northwest Territories annexed to Quebec in 1912, 706,834 square miles, carrying a population of 2,005,779. The capital is Quebec, with (1911) 78,710. The executive authority rests in the Lieutenant-Governor, appointed by the Governor-General of Canada and acting through a responsible ministry. The legislative power devolves upon a parliament of two houses, a legislative council of 24 appointed life members, and a legislative assembly of 74 members elected for 5 years. The Lieutenant-Governor in 1914 was Sir François Langelier, appointed May 5, 1911. Premier in 1914, Sir Lomer Gouin. See CANADA.

QUEENSLAND. A State of the Commonwealth of Australia. The estimated area is 670,500 square miles; the population returned by the census of April 3, 1911, was 605,813, exclusive of full-blooded aboriginals. The capital is Brisbane, which with suburbs had in 1911, 139,480 inhabitants. The Governor in 1914 was Sir William MacGregor, who assumed the administration Dec. 2, 1909; appointed to succeed him was Maj. Sir Hamilton John Goold-Adams, who had been high commissioner for Cyprus. Lieutenant-Governor, Sir Arthur Morgan; Premier, Digby Frank Denham. See AUSTRALIA.

QUICKSILVER. The production of quicksilver in the United States in 1913 was 20,213 flasks, valued at $813,171. Of the amount produced, 15,591 flasks were obtained from California, and 4622 flasks in Arizona, Nevada, and Texas. Owing to generally low prices, the quicksilver industry was not prosperous in 1913. The world's production in 1911–12 was the largest for many years, and probably overran the demand. Figures of the world's production in 1913 showed a slight decrease from those of 1912, and the domestic production was the lowest, with the exception of 1908, since 1860. Much of the California production comes from old mines whose richest ores have been removed, and which cannot be operated with profit when the metal is low. Quicksilver is used mainly in the manufacture of fulminate, drugs, electric appliances, scientific apparatus, and in the recovery of precious metals by amalgamation. A new use in Scotland is the floating of lights of lighthouses on a bath of quicksilver. The metal is now but little employed in silvering mirrors, as nitrate of silver is now chiefly used for that purpose. The imports of quicksilver in the United States in 1913 amounted to 171,653 pounds, valued at $75,361; of this quantity the larger part came from England, and was presumably Spanish in its origin. There were exported, in 1913, 1140 flasks, valued at $43,524. The total world production of quicksilver in 1913 was 4171 metric tons, the larger portion coming from Spain, large quantities from Italy and Austria-Hungary, and a small amount from Mexico.

QUININE. See HYGIENE.

RABIES. That hydrophobia exists among the Philippine dogs has already been proved by investigations pursued since 1907 by Ashburn, Craig, Dudley, and others. More recently Captain Schmitter, of the United States army, found a case in a monkey. The animal was bought for laboratory purposes and when it was received appeared unusually excited. The following day it became savage, and frothed at the mouth, and died the following day with paralysis of the hind legs and muscles of deglutition. The existence of rabies was proved both by finding Negri bodies in the brain, and by injecting a guinea pig with emulsified brain tissue. An epidemic of canine rabies occurred in Seattle between September, 1913, and July, 1914. In dogs, 361 cases were found, nearly 100 of which were proved positive by laboratory methods, and in many other cases the disease was so well defined as to leave no room for doubt as to the genuineness of the infection. Previous to this time Seattle had not had any cases of rabies. In New York City during the first five months of 1914 there was a decided increase in the number of cases. During this period there were 160 cases of the disease in dogs, but there was no increase among human beings. A city ordinance was made at the instance of the Commissioner of Health which required dogs to be both kept in leash and muzzled. In 1913, 60,000 dogs and 200,000 cats were gathered up by the New York Society for the Prevention of Cruelty to Animals, a number ten times as great as that in the previous year. The Arkansas State Board of Health announced that it would give free antirabic treatment to all persons bitten by dogs or other animals suspected of being rabid.

RACING. The year 1914 saw a wonderful revival of thoroughbred racing in the United States, especially in New York. Two tracks, the Aqueduct and the Empire City, opened their gates for the first time in five years, joining Belmont Park in holding regular meetings. *Roamer*, owned by Andrew Miller, made the best showing of the year, equaling the world's record for 1 mile, 1:36⅘, made by August Belmont's *Stromboli* earlier in the season. The stakes won by *Roamer* included the Whitestone, the Carter Cup, the Brooklyn Derby, the Midsummer, the Travers, the Huron, and the Municipal Handicap. Other horses to gain fame in 1914 were H. P. Whitney's *Regret*, and James Butler's *Comely* and *Pebbles*. *Rose Tree II* won 12 out of 16 starts, and only once finished out of the money. This horse also was the biggest money maker of the year, capturing purses to the total of $29,105. Ranking next to *Rose Tree II* in winnings was H. C. Applegate's *Old Rosebud*, with $19,057. The winning American owners were H. P. Whitney, $55,056; J. L. Holland, $42,445; R. T. Wilson, $41,585; B. G. Bedwell, $40,110.

H. B. Duryea's *Durbar II*, an American horse, won the English Derby, while *Sardanaple*, owned by Baron Maurice de Rothschild, carried off the honors in France, capturing the French Derby, the Grand Prix de Paris, the Prix du Jockey Club, and the Prix du Président de la République.

In trotting and pacing, 27 new records were established. *Peter Volo*, who has lost only one heat in his career, went through the season without defeat, and reduced the mile record for a three-year-old to 2:03½. This gives him the distinction of being the first trotter to race to a world's record in three consecutive years. As a yearling, *Peter Volo* held for a time the mark of 3:19. In 1913 he reduced the two-year-old figure from 2:09¼ to 2:04½. *Etawah* broke the four-year-old mark for trotters, 2:05¼, which had stood for 21 years, by setting the record at 2:03¼. Among the pacers, *Directum I*, *Williams*, *Frank Bogash, Jr.*, *R. H. Brett*, and *Anna Bradford* did the best work. *Directum I* paced five heats in 2 minutes or better, and covered the mile in 1:58, the fastest ever paced either in a race or against time. *Williams* paced one heat in 2:00, and three consecutive heats in an average of 2:01. *Anna Bradford*, a three-year-old filly, paced one heat in 2:00¾.

RACQUETS AND COURT TENNIS. Lawrence Waterbury retained the United States singles title in racquets only after a gruelling struggle in the final round with C. G. Osborn of Chicago. The scores were 17-15, 10-15, 18-17, 9-15, 15-11. In the doubles final, Dwight F. Davis and J. W. Wear defeated Hugh D. Scott and George F. Fearing, Jr., 12-15, 6-15, 15-3, 15-6, 15-11, 15-4.

Jay Gould again reigned supreme in court tennis, not only holding his United States amateur title, but defeating George F. Covey of England, holder of the world's professional championship, in a match for the open title. The first half of the match was played in England, where Gould lost by a narrow margin. The second half, played in Philadelphia, resulted in an easy victory for the American player, who captured seven of the eight sets. Gould and W. H. T. Huhn successfully defended the doubles honors, defeating George R. Fearing, Jr., and C. T. Russell 6-5, 6-5, 6-4. Gould and Huhn lost a special match to Joshua Crane and Fearing 5-6, 2-6, 6-4, 3-6.

In England E. W. Baerlein won the amateur championship, defeating Joshua Crane 6-2, 6-1, 6-2. Walter Kinsella, the American professional, defeated E. H. Miles, the English amateur, 6-4, 6-5, 6-5.

RADIO-ACTIVITY. See Agriculture, *Radio-Activity and Plant Growth;* Chemistry; and Physics.

RADIO-TELEGRAPHY. See Wireless Telegraphy and Telephony.

RADIOTHERAPY AND ROENTGENOLOGY. The difficulties attending the use of the X-ray for deep cancers are gradually being solved. Bumm and Warnekros state that after disappointing trials with mesothorium and other radioactive substances, they modified their technic and obtained most encouraging results. The secret of success, they declare, is to use hard tubes, by the cross-fire technic, so as to generate 500 X units in the depths of the tumor. As about six-sevenths of the rays applied to the surface do not penetrate 10 cm. deep, fully 3500 X units have to be applied to the skin in order to obtain 500 units in the focus. No serious injury resulted from this intensive exposure of the skin to the hard rays, even with 8000 X units. Under this treatment the cancer tissue becomes indurated, and loses its malignant characteristics. These treatments are given in massive doses, far apart, and improvement takes place as early as the third week.

The above technic is rendered possible by the invention of an American, Coolidge, of a tube which opens a new field in Roentgen therapy. This tube differs decidedly from the ordinary type. As described by Johnston in the *Journal of the American Medical Association*, in the Coolidge tube "the cathode consists of a spiral of tungsten placed about three-fourths of an inch from a heavy tungsten target. Both these tungsten elements are mounted in an ordinary Roentgen-ray bulb, which is then exhausted by a special series of processes to an almost perfect vacuum. In this condition the tube permits the passage of no electric current, and in order to render it operative it is necessary to heat the tungsten spiral by the passage through it of an electric current of 12 volts from a storage battery. The storage battery, rheostat, amperemeter, and tungsten spiral form an electric circuit. The incandescence of the spiral is controlled by permitting the passage of more or less current by means of the rheostat. This storage battery circuit is carefully insulated, and on the storage battery circuit there is impressed a potential of from 50,000 to 10,000 volts from a high-tension transformer, whereupon tungsten electrons from the incandescent spiral are hurled across the gap in the vacuum, striking on the tungsten target, and from the points of impact Roentgen-rays are emitted. This tube permits the passage of enormous quantities of current for long periods of time, resulting in the emission of great quantities of Roentgen-rays. The penetration of rays depends entirely on the voltage impressed on the tube circuit, and if this is kept constant, the penetration remains constant. There is thus placed in the hands of the roentgenologist an instrument of precision and of extreme power, but it must be remembered that he is dealing with a two-edged sword. It was greatly feared that the introduction of this tube would be followed by a series of grave accidents, both to the roentgenologist employing it and to the patient who may be subjected to its use, unless exceeding care in technic is scrupulously followed. The employment of aluminum filters of at least 3 mm. thickness was advised when this tube is used for deep therapy."

The X-ray had proved to be a great value in the treatment of tuberculous glands, whether they are hard or soft, and even when they are broken down and form fistulas. Under X-ray exposure the glands diminish in size and the fistulas heal with a flexible scar. Danger of interfering with growth processes contraindicates this form of treatment in patients under the age of 10, and in children of this age the great proportion of enlarged glands are found.

Radium Therapy is going through a period of enthusiasm such as the X-ray enjoyed 10 years ago. A good many sensational articles appeared in the press during 1914. Scientific investigators, however, are not so enthusiastic. An important centre for the study of the effects of radium is the Radium Institute of London. It possesses 4 grams of radium, more than the quantity owned by any other single institute; the *Laboratoire biologique du radium* was organized in 1906, since which time 1000 patients have been treated. The Vienna Institute began work in 1912 with half a gram of radium, and now owns one and a half grams. The Samaritan Hospital in Heidelberg possesses 20 mg. of radium. All of these institutions submitted reports of their work for 1913. The English Institute draws no conclusions, but a comparison of the various reports justifies the statement that radium produces a selective destructive action on the majority of cancers, but that its action is limited in extent. It is pointed out that unless the greatest care is used in the application of this substance the more distant portions of the tumor may be stimulated to active growth. Insufficient dosage will stimulate a tumor to renewed activity. All users of radium are emphatic in advising that no operable tumors except those of the skin should be treated by radium in preference to operation. More successful methods of applying this remedy must yet be sought. At present radium does not replace surgery, but merely supplements it.

Ultraviolet Rays. Friedberger made the important announcement that vaccine can be sterilized in 30 minutes, without impairing its potency, by exposure to the violet rays. He also observed that experimental infections of the interior of the mouth could be neutralized by exposure to these rays or to direct sunlight, especially if "sensitized" previously by the application of eosin. The bacteria in the mouth were killed off so promptly and constantly that the investigator thought that throat affections in human beings might be cured and bacillus-carriers sterilized. During his experiments he sprayed the region repeatedly with an eosin, or fuchsin solution of 1 to 100,000. Consult Bainbridge, *The Cancer Problem* (New York, 1914); Coolidge, in *Physical Review of the American Physical Society* (December, 1913).

RADIUM. See CHEMISTRY; and CHEMISTRY, INDUSTRIAL.

RADIUM, URANIUM, AND VANADIUM ORES. The production of these carnotite-bearing ores during 1913 was the largest ever made, and amounted to about 2269 short tons of dry ore, which contained about 81,990 pounds of metallic uranium. The quantity of radium in equilibrium with uranium is equivalent to about 1 grain of radium to 3000 kilograms of uranium, and it is also estimated that the uranium in carnotite is accompanied by about 90 per cent of the radium required for equilibrium. On the supposition that these figures are approximately correct, and that 90 per cent of the radium present is recoverable, then the ores produced in 1913 contained 8.5 grams of recoverable metallic radium, equivalent to 15.9 grams of hydrous radium bromide, valued at $120,000 a gram of metallic radium, or $1,020,000. In the United States uranium minerals were produced in commercial quantities during 1913 only in Colorado and in southeastern Utah, the quantity produced in Colorado being much in excess of the Utah output. The great bulk of the uranium mineral was carnotite, but a small tonnage of pitchblende ore was taken from the Belcher and Calhoun mines, near Central City, Gilpin Co., Colo. A few pounds of uraninite, the crystalline form of pitchblende, were saved in South Carolina as a by-product of feldspar and mica mining. A large number of vanadium minerals occur with the carnotite, so that in mining for uranium a large amount of vanadium is also obtained; in general the vanadium in the ore amounts to more than twice the uranium content. The vanadium in the carnotite ores is saved as a by-product, probably most of it as ferric vanadate, which is sold to manufacturers of ferrovanadium. No important discoveries of carnotite-bearing territory were made in 1913. Two companies during the year endeavored to isolate radium salts, and at the end of the year both were apparently about ready to produce refined radium salts. The value of the imports of radium salts in 1913 was $16,218.

RAILWAY ACCIDENTS. The year 1914 showed distinct improvement in conditions of operation on American railways with fewer accidents, and with a greater recognition of responsibility on the part of operating officials and employees. The question of rail failures and defects in the track with heavy equipment was a cause of serious concern to the maintenance of way officials, and the metallurgists of both the railways and of the steel rail manufacturers. The Interstate Commerce Commission published its usual tables of casualties, and in addition to the number of collisions, increased interest attached to accidents due to defects of equipment and defects of roadway, as the equipment was being inspected by officials of the Interstate Commerce Commission, and the defects of roadway were receiving the attention of the railways themselves. These statistics are summarized in the accompanying tables.

SUMMARY OF CASUALTIES TO PERSONS IN THE U. S. FOR THE YEARS ENDED JUNE 30, 1914 AND 1913

Item	*1914*		*1913*		*1914*		*1913*	
	Steam railways				*Electric railways*			
	Killed	*Injured*	*Killed*	*Injured*	*Killed*	*Injured*	*Killed*	*Injured*
Passengers:								
In train accidents	85	7,001	181	8,662	18	1,182	10	1,252
Other causes	180	8,120	222	7,877	40	2,047	26	1,789
Total	265	15,121	403	16,539	58	3,229	36	3,041
Employees on duty:								
In train accidents	452	4,823	557	6,905	9	100	18	154
In coupling accidents	171	2,692	195	3,360	2	25	1	19
Overhead obstructions, etc.	89	1,490	94	1,835	2	28	6	34
Falling from cars, etc.	497	14,563	560	16,005	8	126	8	133
Other causes	1,314	27,273	1,533	28,514	25	289	17	208
Total	2,523	50,841	2,939	56,619	46	568	50	548
Total passengers and employees on duty	2,788	65,962	3,342	73,158	104	3,797	86	3,589
Employees not on duty:								
In train accidents	5	117	12	146	...	16	...	5
In coupling accidents	...	2	....	1	...	....	...	....
Overhead obstructions, etc.	3	5	2	9	...	....	...	....
Falling from cars, etc.	54	370	65	408	1	13	1	19
Other causes	265	603	283	614	2	5	2	4
Total	327	1,097	362	1,178	3	34	3	28
Other persons:								
Not trespassing—								
In train accidents	9	148	9	110	1	4	1	8
Other causes	1,298	5,827	1,279	5,932	247	1,081	196	860
Total	1,307	5,975	1,288	6,042	248	1,085	197	868
Trespassers—								
In train accidents	75	178	90	174	...	....	...	....
Other causes	5,396	6,176	5,468	6,136	168	139	117	123
Total	5,471	6,354	5,558	6,310	168	139	117	123
Total accidents involving train operation	9,893	79,388	10,550	86,688	523	5,055	403	4,608
Industrial accidents to employees not involving train operation	409	113,274	414	113,620	28	1,053	19	798
Grand total	10,302	192,662	10,964	200,308	551	6,108	422	5,406

DERAILMENTS—STEAM RAILWAYS

Due to Defects of Equipment *Year ended June 30, 1914*

Causes	*Number*	*Persons—* *Killed*	*Injured*	*Damage to road and equipment and cost of clearing wrecks*
Defective wheels:				
Broken or burst wheel	360	4	29	$455,335
Broken flange	534	8	100	526,247
Loose wheel	117	1	74	97,739
Miscellaneous wheel defects	118	2	65	66,766
Broken or defective axle or journal	425	2	120	340,185
Broken or defective brake rigging	580	9	162	398,758
Broken or defective draft gear	411	2	57	253,978
Broken or defective side bearings	143	3	44	110,928
Broken arch bar	276	1	66	278,695
Rigid trucks	217	..	38	113,774
Failure of power-brake apparatus, hose, etc.	260	1	25	130,631
Failure of couplers	233	2	18	116,184
Miscellaneous	512	15	276	468,918
Total	4,186	50	1,074	3,353,038

Due to Defects of Roadway

Causes	*Number*	*Killed*	*Injured*	*Damage*
Broken rail	811	24	810	$387,053
Spread rail	217	3	147	126,327
Soft track	356	..	218	254,265
Bad ties	62	3	113	29,760
Sun kink	27	3	21	22,701
Irregular track	512	12	227	378,883
Broken or defective switch or frog	299	13	294	136,702
Miscellaneous	104	8	157	131,152
Total	1,888	66	1,987	1,516,343

SUMMARY OF ACCIDENTS RESULTING FROM COLLISIONS AND DERAILMENTS FOR THE FIVE YEARS ENDED JUNE 30, 1914 *

Year	*Number*	*Persons—* *Killed*	*Injured*	*Damage to road and equipment, and cost of clearing wrecks*
1910	11,779	773	12,579	$9,828,958
1911	11,865	785	11,793	9,851,780
1912	13,698	772	15,096	11,527,458
1913	15,526	791	14,565	13,049,214
1914	13,806	605	11,437	10,965,181

* For 1910 the figures for persons killed and injured are restricted to passengers and to employees on duty. Returns for electric railways are included in the figures for that year.

Safety First. During the year the Safety First campaign continued, and safety organizations were extended on a number of important railway lines, securing the interest and coöperation of the employees. The interest of the public in safety movements was solicited, and figured in the advertising on not a few of the larger systems, which had creditable records in this direction. It was noticeable that safety rather than speed was more and more an important consideration and a condition of efficient operation. On some of the systems where there had been serious accidents in the years immediately preceding, improved conditions of operation were established, and large volumes of passenger traffic were handled without mishap. In many cases the public at large were beginning to see the justice of the position of the railroads that they should be allowed to spend money on improved signal systems and other features of equipment, rather than on unnecessary employees, such as were demanded by full crew laws in several States.

One of the most serious accidents of the year was a butting-collision of passenger trains on the Kansas City Southern near Tipton Ford, Mo., on August 5, in which 38 passengers and 5 employees were killed, and 34 passengers and 4 employees injured. This collision occurred on a single track railway at a point where there was a side line with a view from curve to curve of about 900 feet, and was due to the southbound train failing to wait at Tipton Ford for the northbound train as directed by order. This accident was unique in that it was the first one to be investigated by the Interstate Commerce Commission wherein a gasoline motor car was involved, and to the fire caused by the ignition of the gasoline was due the large loss of life. Considerable attention was attracted to the disaster on account of the rapidly increasing use of motor cars which carry large quantities of gasoline, as the collision hazard naturally will grow in importance.

A serious passenger train disaster occurred at Lebanon, Mo., on September 15, when 27 persons were drowned by a derailment on the St. Louis and San Francisco line 2 miles west of Lebanon, 182 miles southwest of St. Louis. A westbound passenger train was derailed in a flood caused by a cloudburst, and two passenger cars toppled into a deep gully filled with water. In addition to those killed, 18 persons were injured, but none seriously. A 12-foot embankment on which the track crosses a ravine had been completely washed away, and while the locomotive and the first two cars passed on the sagging track safely, the chair car and smoker were rolled over into the torrent.

Another serious accident of the year was a derailment on the Alabama Great Southern, near Livingston, Ala., September 10, in which 10 persons were killed and 40 were injured. The cause was the malicious misplacement of a switch. In the interval before the passage of the passenger train it was tampered with, and the train was thrown to a siding. In a wooden passenger car 3 out of 7 passengers were killed, and in a steel underframe car 5 out of 15. The inspector of the Interstate Commerce Commission questioned whether, in case of an accident like this, the steel underframe car afforded additional security.

An interesting record of safety on one of the leading American railway systems was that of the Pennsylvania with 26,198 miles of track. Not a single passenger was killed in a train accident during 1914, although 188,411,876 passengers were carried, and the aggregate distance traveled by passenger trains was 67,389,381 miles. More than 3000 trains were run every day, and more than a million trains during the year.

Trespassers. A question that was attracting greater interest than usual was the large number of deaths annually caused by persons trespassing on railway property, especially those using the tracks as a highway and crossing at unauthorized points. From 1901 to 1910, 33,000 persons under 21 years of age were killed or injured while trespassing, and the total number killed in this period was 50,025, with 53,027 injured. In Great Britain during the same period those killed from trespassing amounted to but 4434, and the injured 1315. The reasons assigned for this striking difference are the strictness of the law in the latter country, and the greater care accorded the protection of the right of way by fencing, etc., though in the United States improvements of the right of way such as elevation of tracks has made little difference on account of the laxity of the enforcement of the law and the lenience of magistrates before whom those responsible have been brought by the railway police, as usually the local police manifest very little interest in offenses of this nature. In Great Britain persons other than passengers or employees found on railroad property are fined $10 for each offense, while in France trespassers are liable to a fine up to $589 and jail up to a month. In Germany fines up to $25 are imposed, and Canada imposes fines up to $50 and an imprisonment up to 2 months.

Great Britain. In Great Britain the accident record for 1914 reflected considerable credit on British railway management. An accident occurred at Carr Bridge, June 18, on the Highland Railway, in the course of which a passenger car fell into the stream and 5 passengers were drowned. This was due not so much to defects in operation or maintenance as to an abnormal flood, so that the collision outside the Cannon Street Station on June 27 in which 1 passenger was killed and about 20 injured was otherwise the most noteworthy of the year. In 1908 and 1901 no passengers whatsoever were killed on British railways, and in 1909, but 1 passenger, while up to June 30, the record showed that in 1914 only 6 employees had been killed, and in the second six months of the year so far as information was available but 2 in addition. There had been great improvement in engine drivers not running past signals, and while there was much less traffic after the outbreak of the war, yet there was considerable transportation of recruits and of complete military organizations as well as military supplies, which had to be done expeditiously and under unusual conditions. Such work was carried on safely and with better success than on the continental railways, no casualties being reported for British lines.

RAILWAYS. During the calendar year 1914, a smaller mileage of new railroads was built in the United States than in any year since 1895. In December, 1914, there were in the United States 21,048 miles of railway in the hands of receivers. The greatest mileage of railways in the United States which was ever placed in the hands of a receiver in a single year was in 1893, and in that year 29,340 miles went into the hands of a receiver, but by 1898 all but 12,744 miles had been taken out of receivership. Wages of all classes of employees in railway service were never as high as they were in 1914. On the other hand, almost without exception, there were fewer men employed in railway service in 1914 than in 1913. Even before the beginning of the European War none but the strongest railway companies were able to raise new capital except through the issue of short term notes, in most cases secured by a very ample margin of high grade collateral. It was with this condition of affairs that the railways in Official Classification territory presented a case to the Interstate Commerce Commission, in which they asked for a horizontal increase in freight rates approximating 5 per cent. On original hearing of the case, the Interstate Commerce Commission refused to grant the increase except to roads west of Buffalo and Pittsburgh and east of Chicago, by a vote of 5 members to 2, the decision being handed down on July 29, 1914. (See the 1913 Year Book for a discussion of the conduct of the earlier part of this case.)

After the outbreak of the European War, a rehearing before the Interstate Commerce Commission was requested. The request was granted, and on Dec. 18, 1914, the Interstate Commerce Commission handed down a decision which was favorable to the roads, granting with one exception (coal) a 5 per cent increase in rates. In the original case, roads in Central Freight Association territory, which includes the roads running between Buffalo and Pittsburgh and Chicago and St. Louis, were granted a 5 per cent increase in certain rates. Central Freight Association territory is included in Official Classification territory, the ascertaining part of Official Classification which takes in all the roads north of the Ohio River and west of Chicago and St. Louis. When schedules were prepared by the Central Freight Association roads in accordance with the commission's original findings in the rate advance case, it was found that because of competitive conditions, but a small percentage of all of the rates could be increased, notwithstanding the commission's permission. When, however, the Trunk Lines (lines east of Buffalo and Pittsburgh) were also permitted to raise their rates, this difficulty was in a large measure removed, and all rates, including those formerly excepted, were raised, coal rates, however, not being increased.

It is always hard to accurately distinguish between cause and effect in contemporary events. In 1914 the full significance of the Interstate

Commerce Commission rules in regard to accounting practices of the railways was apparent. Previous to 1907, there had been widely different methods used by the different railway companies in regard to what they considered expenses of operation and expenditures for property account which could be properly capitalized and paid for from the proceeds of the sale of securities. The strong roads had treated as expenses not only renewals and replacements of existing property, but also their liberal expenditures for the betterment of existing property. Weak roads, on the other hand, not only charged all betterment of property to capital account, but had narrowly restricted the meaning of expenses so as to exclude the cost of obsolescence. Since strong and weak roads are in a great many thousands of cases competitors, the enforcement of the principle of uniformity in regard to expenses and capital expenditures extending over a series of years, sharply emphasizes the weakness of the weak roads. Whether or not the present very large mileage of roads in bankruptcy is the result of the publicity given to the weakness of these roads' conditions through the enforcement of the Interstate Commerce Commission's accounting principles, or whether it is simply the manifestation of other economic principles, of which the enforcement of the uniform system of accounting is also a result, it is hard to say. At any rate, the combination of events has tended to make clear certain fundamental principles which govern the railway development which would probably have been less clear had not the Interstate Commerce Commission activities brought them so dramatically before the public.

The point so clearly brought out in 1914 in regard to railways was that in the United States there are cycles, during which, as traffic increases, the railway companies experience the working of the law of increasing returns, each additional ton carried and each additional passenger carried reducing the unit cost. But at the end of this cycle, there is a sudden reversal of the law and railways suffer under the law of decreasing returns. For the 4 or 5 years previous to 1914 it had been the law of decreasing returns that had apparently been operative. It was nominally through their ability to prove this to the Interstate Commerce Commission that the railways succeeded in obtaining their rate advance. Actually the railways carried their case to the public and proved it to the public, and it was public pressure very largely which was effective in deciding the commission to reverse itself. Comparatively seldom have newspapers all over the United States been so unanimous in their opinion in the discussion of a question of broad public policy as they have in 1914 in their discussion of the railway situation. From Houston to Seattle, and from Tampa to Bangor, newspapers both editorially and in their news columns gave prominence to the deplorable condition to which the roads had been brought. The case often was overstated, but possibly not more so than was necessary to arouse and enlighten interest in a very real danger that threatened the country.

It is interesting, instructive, and rather encouraging to see that, while the State and Federal courts by long series of decisions had given more and more power to the Interstate Commerce Commission in its regulation of railway matters, the first serious check to the arbitrary exercise of this power came directly from public opinion. The railways overruled in their appeals from the commission to the courts, appealed to the public and to President Wilson.

It will probably be a distinguishing event of 1914 that after the 5 per cent rate advance had been refused by the Interstate Commerce Commission, and while the appeal for a rehearing of the case was pending, a committee of railway presidents, headed by Frank Trumbull, chairman of the board of directors of the Chesapeake and Ohio, and the Missouri, Kansas, and Texas, went openly and directly to the President of the United States, and laid before him in a petition, which was classic in its simplicity, a statement of their case, with the request that he express his opinion in regard to it. He granted the request by giving out a letter which he addressed to Mr. Trumbull, in which he said:

"You ask me to call the attention of the country to the imperative need that railway credits be extended, and the railroads helped in every possible way, whether by private coöperative effort or by the action wherever feasible of government agencies, and I am glad to do so because I think the need very real. . . . The law must speak plainly and effectively against whatever is wrong or against the public interest, and these laws must be observed; for the rest, and within the sphere of legitimate enterprise, we must all stand as one to see justice done and all fair assistance rendered and rendered ungrudgingly."

Summary of the Rate Advance Case. In the original 5 per cent rate advance case, which was begun in 1913, railways attempted to prove that, because of the increased wage schedules, the higher standard of service, the general increase in the cost of materials, and the large increase in the cost of new capital, their present revenues were inadequate, and the best way to increase these revenues was through a horizontal increase of 5 per cent in freight rates. This argument was opposed by Louis D. Brandeis, acting as special counsel for the Interstate Commerce Commission, on the ground that although it was true that the revenues were inadequate, a 5 per cent increase in freight rates was not the best way to meet the situation, but that the railways should study their own services, and increase the price of those services which were not now bearing their share of the burden of expenses. Chief among such services were terminal services in respect to both freight and passenger services. The commission in the majority opinion adopted Mr. Brandeis's view.

Two minority opinions were handed down, one by Commissioner Daniels, and one by Commissioner McChord, in both of which the belief was expressed that if revenues were inadequate, and the minority commissioners agreed with the other members of the commission that they were inadequate, the 5 per cent advance should have been granted. Commissioner Daniels's opinion in particular was very clearly and concisely reasoned, and discussed in detail each one of the suggestions which had been made by Mr. Brandeis and most of which were embodied in the majority opinion. When the case came up for rehearing the commission limited the evidence to new facts which had occurred since July 29. As a matter of fact, counsel for the railroads went back over many of the arguments made in the original case. In his final argument, lukewarmly opposing the petition of the railways, Mr. Brandeis claimed that the only new thing which had occurred since July 29 in regard to the railway situation in America was the European War, and that since all classes of the people had to bear the hardships incident to the war, railway stockholders should not be permitted to shift their burdens to other shoulders, and that if new economies were necessary to permit of solvent railway operation, the situation should be met by the reduction of dividends.

On December 18 the commission handed down a very brief opinion in which they granted a 5 per cent increase on all freight rates with the exception of the rates on coal, and the so-called lake and rail rates. The lake and rail rates are those under which freight moves from New York to Buffalo, and from there either all the way by water, or part way by water to Chicago or vice versa. Those rates were already lower than the all-rail rates, and the effect of not permitting increases in these rates simply accentuated the differences already existing. In effect the commission said that the events which had taken place since July 29 showed that the roads were more badly in need of additional revenue than the commission had thought, and that the financial situation caused by the war was so serious as to make it dangerous to wait for additional revenue until the former suggestions of the commission could be carried out. Two commissioners, Chairman Harlan and Commissioner Clements, dissented, both stating that the horizontal increase in freight rates was not in their opinion the right way for the roads to obtain the needed additional revenue.

The New England Situation. In December, 1913, the New York, New Haven, and Hartford had passed its quarterly dividend. In 1914 the Interstate Commerce Commission made a rather sensational report in regard to an investigation which it had undertaken of New Haven affairs. Suit was brought by the Attorney-General of the United States to compel the separation of the Boston and Maine and the New Haven, and of the numerous trolley lines and steamship companies which had been controlled through stock ownership by the New Haven. The final result was that an agreed judgment was entered, which provided for putting the controlling stock of the Boston and Maine in the hands of trustees, representing variously the minority stockholders of the Boston and Maine, the New Haven, the States of Massachusetts, New Hampshire, and Maine. The trolley lines and steamship companies were also placed in the hands of trustees, and then criminal suits were brought against former directors of the New Haven under the Sherman Anti-Trust Law.

Other Investigations Made by the Interstate Commerce Commission. An investigation was made by the Interstate Commerce Commission into the affairs of the St. Louis and San Francisco, which had been placed in the hands of receivers in 1913. No definite conclusion was reached by the commission, but in general blame for the 'Frisco receivership was placed on the policy of overextension and of buying short lines at exorbitant prices. It was also brought out that some of the directors had an interest in the short lines which were sold to their company.

An investigation was made by the Interstate Commerce Commission into the Chicago, Milwaukee, and St. Paul accounting methods. The commission's report criticised very severely some of the practices of the company, and in particular pointed out that just previous to selling an issue of bonds, the road made an annual report which quite considerably overstated the revenues of the year by including in these revenues amounts which were arbitrarily charged for hauling material over the old St. Paul to be used in the construction of the Pacific Coast extension of the road. While the commission's rules permitted of the charging of a reasonable rate on this construction material if the charge was made during the year in which the construction was done, the commission pointed out that the St. Paul had waited 3 years and then had taken into its earnings of the last of these 3 years all which would have been chargeable during each one of the 3 years.

An investigation was made into the Chicago, Rock Island, and Pacific situation. The report, however, in this case was not given out in 1914. The situation was a particularly interesting one. In 1902, D. G. Reid, Judge Charles F. Moore, and William B. Leeds bought in the open market sufficient stock to control the board of directors of the Chicago, Rock Island, and Pacific Railway Company, an Illinois corporation. They then formed two holding companies, the Chicago, Rock Island, and Pacific Railroad Company, and the Rock Island Company. The railroad company was an Iowa corporation, and the Rock Island appropriately enough was a New Jersey corporation. The plan was for the Iowa corporation to buy the stock of the Illinois corporation and deposit this stock as collateral for an issue of bonds, and to issue its own stock to the Rock Island Company. The holders of the old Illinois corporation were offered $100 in railroad collateral bonds, $100 in Rock Island Company—New Jersey corporation—common stock, and $75 in Rock Island preferred. Whereas the railway stock had been selling at from $150 to $200, the holders were offered exchange securities bearing a face value of $250. The only income available for the payment of 4 per cent interest on the collateral bonds of the railroad were dividends paid on the railway stock, and no adequate provision was made for raising new capital. Control of the whole top-heavy affair was vested in the preferred stock of the New Jersey corporation, and although the 7000 miles of railway constituting the system were well operated and well maintained, sufficient new capital was not raised to make the conditions and betterments to the property which should have been made to keep it in shape to operate at a low enough cost to offset the various tendencies which increased the total cost of operation. In 1914, the railway company was no longer able to pay dividends. This necessitated a default on the collateral bonds, which gave the holders of these bonds the right to bring foreclosure proceedings and sell or take the railway stock which was deposited as collateral, and thus entirely wipe out the common stock and preferred stock of the New Jersey corporation. The foreclosure sale took place, and the bondholders bought and distributed among themselves pro rata the railway company stock.

Legislation. The Clayton Bill supplementing the anti-trust laws was passed by Congress and became a law on Oct. 15, 1914. It consists of 26 sections, but deals with common carriers only in Sections 7, 9, and 10. Section 7 forbids one corporation to acquire stock of another, if such acquisition will restrain commerce or lessen competition; but with certain provisos; and one of these provisos is that Section 7 shall not prohibit common carriers from aiding or buying branch lines or feeders where competition is not lessened by such action. Section 9 makes it a felony for an officer of a common carrier to willfully misapply funds; maximum penalty, 10 years' imprisonment and a fine limited only by the discretion of the court. Section 10 is designed to forbid collusive contracts for supplies.

In 1912 the Missouri Legislature had passed a full crew law, similar to the laws now in effect in New York, Pennsylvania, and New Jersey. These laws require one more man on the train than under most circumstances would be assigned to such a train. The Missouri Constitution provides for a referendum, and the railway companies in that State went to work to get sufficient petitions for a referendum vote of the people on the full crew law. They succeeded in getting the petitions, and in 1914 at the general elections, the people overruled the Legislature and defeated the full crew law. As an indication of popular sentiment toward railways and of the success of the plan of public education which railway executives have been so vigorously working on for some years, this Missouri referendum vote ranks in importance with the attitude of the newspapers toward the 5 per cent rate advance case.

Legal Decisions. In the so-called Shreveport case, the United States Supreme Court held that the Interstate Commerce Commission, by prescribing rates between Texas and Louisiana which were necessarily on a par with certain State rates in Texas, had assumed jurisdiction, and the State of Texas could not make rates for the Intrastate traffic which would nullify the action of the Interstate Commerce Commission. The Supreme Court thus gives the Interstate Commerce Commission jurisdiction over State rates where these rates affect interstate business.

Wage Disputes. The enginemen and firemen of 98 railways operating west of Chicago early in 1914 presented demands for increased wages and superimposed changes in working conditions which the railways estimated would cost them in the neighborhood of $33,000,000 a year. The demands were refused, and a strike vote was taken. The employees refused to ask for mediation, but submitted to it after it had been requested by the railway companies, and after the Board of Mediation and Conciliation, of which Judge Chambers was chairman, had failed to bring about an agreement. H. E. Byram, vice-president of the Chicago, Burlington, and Quincy, W. L. Park, vice-president of the Illinois Central, F. A. Burgess, assistant grand chief of the Brotherhood of Locomotive Engineers, Timothy Shea, assistant to the president of the Brotherhood of Locomotive Firemen and Enginemen, Charles Nagel, ex-Secretary of Commerce and Labor, and J. C. Pritchard, presiding judge of the United States Court of Appeals of the Fourth Circuit, were appointed arbitrators. Hearings continued during December and were to extend on into 1915.

On Jan. 19, 1914, all of the enginemen and trainmen of the Delaware and Hudson went on a strike because of the refusal of the company to reinstate an engineman who had been discharged because he had permitted one of the cars of his train to be dragged over the ties for a long distance after it had been derailed. The Board of Mediation and Conciliation at once offered its services, and the company agreed to abide by its findings. The board advised the reinstatement of the engineman, and the strike was called off. The facts in the case were never made public, but the situation was substantially as follows:

The employee had had a bad record, but had not done anything to lay himself open to discharge, and when he committed the offense of dragging the car over the ties, this was used as a good chance to get rid of an undesirable employee. Under ordinary circumstances an engineman would not be discharged for this offense, because such a thing might happen in a long train and the engineman not know it. The Board of Mediation apparently took the position that no matter how undesirable the employee might be, the railway company had shown bad judgment in the selection of this particular offense as the one for which he should be discharged.

Equipment. The total number of cars built in 1914 was 104,541, comparing with 207,684 built in 1913. The total number of passenger cars built in 1914 was 3691, comparing with 3296 built in 1913. The total number of locomotives built in 1914 was 2235, comparing with 5332 built in 1913. The 1914 figures were the smallest for any year since 1899. The total number of cars and locomotives ordered (which is not the same as will be noted as the number built) was as follows:

	1913	*1914*
Locomotives	3,467	1,265
Freight cars	146,732	8,264
Passenger cars	3,179	2,002

Motive Power. The large locomotive was again to the fore in 1914. The Pacific type locomotives built by the American Locomotive Company for the Chesapeake and Ohio led in point of total weight for this type, this being 312,600 pounds, while the maximum tractive effort of 46,600 pounds developed by these engines was also the greatest for this type. The heaviest locomotive of the Mikado type was also a Chesapeake and Ohio engine, and weighed 322,500 pounds. The Baldwin Locomotive Works built during the year for the Baltimore and Ohio a 2-10-2 type locomotive which had a total weight of 406,000 pounds, and was the heaviest locomotive ever built on a single set of drivers. The world's record for large locomotives was again broken by the construction for the Erie Railroad by the Baldwin Locomotive Works of a 2-8-8-8-2 type, Triplex compound articulated locomotive using the weight of the tender for adhesion, and having a total weight of 853,000 pounds. This locomotive had a theoretical maximum tractive effort of 160,000 pounds, and had hauled a train of 251 loaded cars weighing 17,912 tons.

Electrification. The first year of electric operation of the Butte, Anaconda, and Pacific, where heavy tonnage ore trains have been handled regularly on steep grades with marked reductions in operating costs, was completed in

1914. The New York, New Haven, and Hartford also finished the electrification of its four-track main line into New Haven. The Chicago, Milwaukee, and St. Paul was proceeding with the electrification of the first engine district of 114 miles from Harlowton, Mont., to Deer Lodge, crossing the Rocky Mountains, which was the first step in the electrification of 440 miles of main line extending west to Avery, Idaho. Trolley poles were erected for a considerable distance and a contract was awarded for 12 electric locomotives and substation equipment. It was expected that the first district would be completed for operation late in the fall of 1915. The Norfolk and Western was engaged in the electrification of 30 miles of its line between Bluefield, W. Va., and Vivian. The power house and overhead construction were completed during the year, and the first locomotive tests were being conducted. Another large project under construction involved the electrification of 80 miles of suburban tracks on the Paoli subdivision of the Pennsylvania in the suburbs of Philadelphia. This project was also approaching completion.

RECEIVERSHIPS AND FORECLOSURES. During the calendar year 1914, 22 roads, with a total mileage of 4222, with a funded debt of $137,250,296, and with a capital stock of $62,321,150 were put into the hands of receivers. There was only one year in which a greater mileage of road went into bankruptcy, and no year since 1896 in which there was as great a mileage in the hands of receivers. Whereas, however, 1896 was not the culmination of a period of depression, but was the beginning of better times, and by 1898 the mileage in the hands of receivers was reduced to 12,744, 1914 showed no tendency toward improvement, but a continuance of the downward tendency. There were only eight roads which were taken out of the hands of receivers in 1914, and none of these were important.

Of the roads that went into the hands of receivers in 1914, the two most important were the Cincinnati, Hamilton, and Dayton, operating 1015 miles of road, and the International and Great Northern, operating 1106 miles of road. The immediate cause of the Cincinnati, Hamilton, and Dayton receivership was the road's inability to recover from the effects of the flood of the year before, and the Baltimore and Ohio's unwillingness to jeopardize its own position by making further advances to its controlled road at a time when its own credit was put to so severe a strain by business depression and the war. The immediate cause of the International and Great Northern receivership was the European War, and the inability of the company to refund $11,000,000 notes which fell due August 1.

NEW CONSTRUCTION. The new railroad built in 1914 totaled 1532 miles of road, which was the smallest mileage built in any year, except 1895, of which the *Railway Age Gazette* had any records, its records extending back to include 1893. In 1913, 3071 miles of road were built, and in 1902, which was the best year of which there is any record, 6026 miles were built. Nineteen fourteen was the first year in which more railroad was built in Canada than in the United States, the total first-track built in 1914 in Canada amounting to 1978 miles.

The following table shows the new mileage built in 1914 in each State:

NEW TRACK BUILT IN 1914

United States	*First track*	*Second track*
Alabama	1.00	38.81
Arkansas	27.10	.50
California	108.91	18.94
Connecticut	.....	2.10
Delaware	1.15	.....
Florida	220.46	.....
Georgia	14.66	7.84
Idaho	117.22	12.89
Illinois	8.17	9.24
Indiana	12.80	18.15
Iowa	26.16	110.00
Kansas	11.00	.49
Kentucky	81.57	16.68
Louisiana	7.79	.....
Maine	.21	.61
Maryland	.....	12.14
Massachusetts	.....	.13
Michigan	18.81	.....
Minnesota	8.42	.....
Mississippi	19.15	.....
Missouri	4.82	4.89
Montana	48.18	2.00
Nebraska	.88	.....
Nevada	10.01	.70
New Jersey	.80	.....
New Mexico	29.47	.....
New York	10.45	9.90
North Carolina	84.00	71.61
North Dakota	68.24	4.38
Ohio	17.05	28.30
Oklahoma	4.00	5.00
Oregon	90.42	2.80
Pennsylvania	62.74	.97
Rhode Island	.....	.....
South Carolina	66.60	.....
South Dakota	41.80	.....
Tennessee	11.21	45.56
Texas	50.86	.80
Utah	41.95	.....
Virginia	66.05	74.00
Washington	142.78	61.80
West Virginia	19.80	5.99
Wisconsin	29.78	9.41
Wyoming	61.48	.....
Total	1,531.80	565.58
Canada	1,978.07	152.50

See RAILWAY ACCIDENTS. See also section *Communications* under the different countries, and under the separate States of the United States.

RAISULI, MULAI AHMED BEN MOHAMMED. A Moroccan chieftain and bandit, died Sept. 5, 1914. He was born in 1867, a prince of the royal blood of Morocco, and among the tribesmen subject to him was held to be a patriot who would rid the land of foreigners. The area over which he ruled was in the desert region of Morocco, and for many years he carried on a desperate guerrilla warfare against tyrants of his own country and against foreign invaders. His name became prominent in the United States in 1904, because of his abduction in that year of Ion Perdicaris, an American citizen, and his stepson, Cromwell Varley, a British subject, who were seized in their château, four miles from Tangier and carried into the mountains. After tedious diplomatic representations failed, John Hay, at that time Secretary of State, became convinced that the government of Morocco was not acting in good faith in the negotiations for the release of the two men, and Rear Admiral Chadwick was ordered to land a force at Tangier. An ultimatum is said to have been sent to the Sultan of Morocco by President Roosevelt, to the effect that the United States government must have "Perdicaris alive or Raisuli dead." Shortly afterwards the Moroccan government moved to such purpose that the prisoners were freed after the payment of ransom money; the price extorted by Raisuli being a pardon, $70,000 in cash, and a governorship. Three years later he kidnapped a British subject, Kaid Sir Harry Maclean, but finally released him after negotiations carried on by the British government in Morocco. On account of his cruelty and daring the name of Raisuli became a terror in Morocco, and when France and Spain decided to police Tangier jointly, it was resolved to get rid of the man who was an ever present obstacle in the side of order. In 1907 he was deposed from the governorship, his fortresses razed, his tribesmen scattered, and he himself obliged to flee to the mountains. In 1913 and early in 1914 he organized a new revolt against the Sultan and he was reported to have proclaimed himself Sultan of Morocco.

RAMSAY, Francis Munroe. Rear admiral (retired) of the United States navy, died July 20, 1914. He was born in 1835 and was appointed midshipman in 1850; after serving for five years on the Pacific squadron he entered the United States Naval Academy from which he graduated in 1856. He served in the Civil War and took part in several engagements connected with the opening of the Mississippi River. He was appointed captain in 1877, and commodore in 1889. From 1881 to 1886 he was superintendent of the Naval Academy and was chief of the bureau of navigation from 1889 to 1897. In 1894 he was appointed rear admiral and in 1897 retired upon reaching the age limit.

RANKIN, Arthur M'Kee. An American actor, died April 17, 1914. He was born in 1841 in Canada, and first appeared on the stage under the name of George Henley in Rochester, N. Y. In the early '60s he acted in London under his own name and his first New York appearance was in 1870 with Lydia Thompson. He was for a time associated with the Continental Theatre Company in Boston, and after playing for one season in California, he joined the stock company of A. M. Palmer, where he became one of the best known American actors. He was especially successful in *The Two Orphans*, and after securing the dramatic rights to Joaquin Miller's novel, *The First Families of the Sierras*, he made it into a play called *The Danites*, which had a successful run in New York and also in London. In 1883 he built Rankin's Theatre in New York, which was opened by Joseph Jefferson in *Rip Van Winkle*. He married Kitty Blanchard, who as Mrs. M'Kee Rankin obtained considerable reputation as an actress; they were separated about 25 years before Mr. Rankin's death, but were reunited in 1911. In the same year Mrs. Rankin died. In his later years Mr. Rankin appeared chiefly in Shakespearean rôles.

RAPID TRANSIT. The year 1914 witnessed the construction of facilities for providing additional communication within cities and between urban centres and the suburbs. The great New York Dual Subway System was under construction, and the work was proceeding regularly and systematically during the year with a marked improvement in method and organization over that characterizing the original subway. In Boston some of the works in progress were being brought to completion, and new extensions were planned. In Europe there were notable increases of facilities in London and Paris, and in South America a certain amount of construction was also being done.

New York Dual Subway System. The Public Service Commission for the First District of New York, in charge of the construction of subways in Greater New York, reported the continuation of its work under the Dual System agreements. From Jan. 1 to Dec. 31, 1914, it awarded 24 construction contracts besides several contracts for track materials, installation of tracks, and station finish, aggregating in contract prices about $52,000,000. This was more than double the amount awarded in the year 1913, when 13 contracts were awarded, aggregating about $24,000,000. The money disbursed by the city and the companies during the year 1914 in payments to the several contractors and for the purchase of real estate on city-owned lines was about $26,000,000, or an average of more than $2,000,000 per month. Of these payments the Interborough Rapid Transit Company, which is obligated to contribute $58,000,000 toward the construction of city-owned lines, provided about $4,000,000, and the New York Municipal Railway Corporation, a corporation formed by the Brooklyn Rapid Transit Company, which is pledged to contribute about $14,000,000, furnished about $600,000. At the close of the year 64 of the 83 sections on the city-owned lines of the Dual System were under contract, the aggregate of the contract prices for the same being about $142,000,000.

The total cost of the new system was estimated at $330,000,000, of which the city was to supply about $164,000,000, the Interborough Rapid Transit Company about $105,000,000, and the New York Municipal Railway Corporation about $61,000,000. This includes both construction and equipment. The cost of construction alone of the city-owned lines was estimated at $236,000,000.

During the year work was in progress in New York City to provide transit relief during the year 1915 by the temporary operation of the Steinway tunnel and the Fourth Avenue subway in Brooklyn. The Steinway tunnel runs from 42d Street, Manhattan, under the East River to Long Island City, and was being put in shape for temporary operation by the Interborough Rapid Transit Company, with transfers to and from the existing subway, this work requiring considerable repair and readjustment. The Fourth Avenue subway in Brooklyn, running from the Municipal Building, in Manhattan, through the Centre Street Loop subway to the Manhattan Bridge, over that bridge to Flatbush Avenue Extension, and through Flatbush Avenue Extension, Fulton Street, Ashland Place, and Fourth Avenue to 86th Street, was practically completed as far as 43d Street, and work was well advanced on the extension from 43d to 86th Street. The commission expected to have the extension completed as far as 65th Street so that track-laying might begin by April 1, 1915. The reconstructed Sea Beach railroad of the New York Municipal Railway Corporation, also approaching completion, joins the Fourth Avenue subway at 65th Street and runs from there to Coney Island. The commission was planning to have temporary operation of the whole line from the Municipal Building, Manhattan, to Coney Island before the opening of the summer season of 1915.

Contracts for the third-tracking of the elevated lines in Manhattan and the Bronx were awarded during the year, and work was well advanced. In Brooklyn the New York Municipal Railway Corporation began work on the third-tracking of the Fulton Street and Broadway elevated railroads, completed an extension to Lutheran Cemetery, and was making good progress on the extension of the Fulton Street line out Liberty Avenue to Lefferts Avenue, Queens, so that operation of all these extensions, as well as the new city lines in Queens, should be possible during the year 1916.

An important event in connection with the construction of the new subways was the Labor Law litigation which arose toward the end of the year, when the question of the employment of alien laborers on the subway contracts was raised. A taxpayer's suit was brought to restrain the commission from forfeiting any contracts or suspending any payments to contractors on account of the employment of aliens, as forbidden by the State law. The Supreme Court sustained the Labor Law, but the plaintiff appealed to the Appellate Division, First Department, which, on Dec. 31, 1914, reversed the court below and held the alien labor provision unconstitutional. The commission instructed its counsel to take an appeal to the Court of Appeals.

In October, 1914, the original subway ended its tenth year of operation. Its total cost to the city up to Dec. 31, 1914, was $56,129,785.76. From the day it was opened, Oct. 27, 1904, up to the close of the fiscal year ended June 30, 1914, the ticket sales aggregated $2,332,401,435, and the gross receipts $120,084,198. Of this, $20,421,069 was paid as rental to the city, namely, for interest and sinking fund on the municipal bonds issued for construction.

BOSTON SUBWAY SYSTEM. The Boston Subway System, which provides a new rapid transit route through the Back Bay district, brings the suburban sections of Allston, Newton, and Brookline seven minutes nearer the business centre, and at the same time enables the Boston Elevated Railway to withdraw a large percentage of its surface cars from the most congested trackage of the system, was opened October 3. This work was typical of the progress being made by the Boston Transit Commission in subway building in that city, where it has become largely a matter of routine, and the aim is made to complete every year or so a new section, so that while there never is under construction a project as large as those in New York, nevertheless the work is being carried on thoroughly and systematically. The new line extended from Park Street Station, which was to be early enlarged, and made stops at Copley Square and Massachusetts Avenue, with transfers at various points. The general scope of this work was referred to in the 1913 YEAR BOOK.

LONDON. Within London and the suburbs various improvements were in progress, and the connection of existing stations, junctions, and railway lines, was being carried on energetically, as well as suburban electrification. The London and Northwestern continued the electrification of the Watford line, and at the end of the year the final portion from Harrow to Euston, and the through service between Watford and the Elephant and Castle Station, was inaugurated. An extension of the Bakerloo Railway between Paddington and Queen's Park, belonging to the London Electric Railway Company, was almost completed at the end of the year. The various London railways were better connected than before by the completion of the Earls Court Junctions, and the construction of passenger escalators at the principal stations. Thus new escalators were opened at Oxford Circus, Charing Cross, and the Baker Street Station, the first mentioned being capable of transporting 27,000 passengers per hour. The total number of escalators in use amounted to 16, and they served to save two minutes on each journey. In connection with the development of the underground systems of London it was recorded that the District Railway Company could run 239 trains daily between Hammersmith and Earls Court in place of 107 trains operated by steam previously.

RASMUSSEN EXPEDITION. See POLAR RESEARCH, *Arctic*, section *Greenland*.

RATES, RAILWAY. See RAILWAYS.

RATS. See PLAGUE.

RECALL. See ELECTORAL REFORM.

RECEIVERSHIPS. See RAILWAYS.

RECLUS, PAUL. A French surgeon, died at Paris on July 29, 1914. He was born in 1847, practiced his profession for some time in Southern France, and after coming to Paris became surgeon in chief at the Hôtel Dieu. Later he was appointed professor of clinical surgery at the Faculté de Médicine de Paris. He was a member of the Académie de Médicine, held decorations and offices in various other medical and surgical societies, and in 1913 was made a commander of the Legion of Honor. He wrote, in collaboration with Kirmisson, Bouilly, and Peyrot, a standard work on surgery; in collaboration with Emil Forgue, a treatise on surgical therapeutics; and also a treatise on medicochirurgical practice. He introduced the use of cocaine in surgical operations; and it was chiefly to test the value of cocaine as a local anæsthetic that J. Regnault, a French army surgeon, operated successfully and without pain on himself for hernia in 1912. Reclus also experimented successfully with novocain as a local anæsthetic; and disinfected wounds with tincture of iodine.

RED CROSS, THE AMERICAN NATIONAL. The volunteer reserve emergency organization of the American people to relieve distress in times of peace and war. The year 1914 was by far the most remarkable in the history of the association by reason of the outbreak of the European War and the unprecedented measures of relief thereby made necessary. The regular work of the association in the field of national and international relief was also carried on. Red Cross societies were originally intended only to supplement the regular army medical services in war time; but the occurrence of great disasters by famine, fire, pestilence, and flood indicated the need of a permanent organization during times of peace, and in order to provide the necessary authority and efficiency Congress in 1905 incorporated the American National Red Cross. Government supervision, the annual appointment of five members of the Central Committee, the governing body of the American Red Cross, by the President of the United States, an annual report made to the Secretary of War and printed as a public document, the annual auditing of the accounts of the American Red Cross by the War Department—these provisions effectively guarantee integrity of administration and that the funds given to the Red Cross for benevolent purposes will be properly expended and accounted for. The results of this widening of the field of operations and of increased efficiency are seen in the fact that since 1905 the American Red Cross has helped the sufferers and victims of over 75 disasters and spent therefor over $12,000,000 in money and supplies.

European War Relief. The primary objects are the care of sick and wounded soldiers and sailors of the belligerent nations and the relief of distressed noncombatants by supplies of money, food, and clothing. This is accomplished through the foreign Red Cross societies, ambassadors, consuls, and reliable relief committees abroad. In many ways the most urgent form of relief is that destined for the wounded on the field of battle. The new conditions of the gigantic conflict in Europe, which has involved so large a part of the land and water area of the world, called for the utmost effort, both in liberality and resourcefulness, to fulfill the purposes of the Red Cross. They were met with all possible promptness. The countries at war were offered, and accepted, the services of surgeons, trained nurses, also surgical equipment, including bacteriological and sterilizing outfits and hospital supplies. A Red Cross ship was at once chartered and carried to Europe 171 surgeons and nurses, together with the necessary supplies and equipment. Between Aug. 1, 1914, and the beginning of 1915 a total of 45 surgeons and 150 nurses had been sent to Europe and distributed among the English, French, Russian, German, Austro-Hungarian, and Servian hospitals. All funds for Belgian relief, excepting those sent to the Belgian Red Cross, have been transmitted to the Belgian Relief Committee. To the latter committee have also been sent all funds designated for the Committee of Mercy.

The different units (a unit is a working force of 3 surgeons and 12 nurses sent to a hospital, together with the necessary supplies) are distributed as follows: The English units are in charge of the American Women's Hospital at Paignton; the French, in charge of a hospital at Pau; the Russian, a hospital at Kiev; the German, hospitals at Gleichwitz and Kosel; the Austro-Hungarian, hospitals at Vienna and Budapest; the Servian, a hospital at Belgrade and other hospitals which had not reported up to Dec. 31, 1914. Very satisfactory reports as to the quality and amount of the work done by the Red Cross surgeons were received. Funds have been received and transmitted to aid the American Ambulance at Paris, the American Women's Hospital at Paignton, the American Red Cross Hospital at Munich, the hospitals in charge of Red Cross units in Austria-Hungary and Germany, the Netherlands Red Cross, the American Relief Clearing House in Paris, the American Red Cross Committee at Peking, China, Belgian refugees in Holland, the Prisoners' Bureau of the International Red Cross Committee at Geneva, British and French hospitals in Turkey, the American Mission Hospital in Turkey, Austrian and German prisoners in Siberia, and the relief and hospital work at Beirut, Syria.

A vast quantity of supplies have been bought and sent to the Red Cross societies and various hospitals and committees in Europe. These include: cotton, 772,900 pounds; gauze, 802,400 yards; bandages, 709,000; adhesive plaster, 3168 rolls; chloroform and ether, 13,965 pounds; drugs and medicines, 77 cases; surgical instruments and accessories, 35 cases; United States army field medical outfits, 20; sterilizers for dressings and instruments, 7; disinfectants, 20 cases; antityphoid treatments, 15,000 doses; tetanus antitoxin, 50,000 doses; smallpox vaccine, 10,000 tubes; blankets, 9500; shawls, 2211; coats, 516; sweaters for women and children, 1740; alcohol, 10 donated barrels; miscellaneous donated supplies, 2638 cases. American ambassadors and surgeons abroad inform the American Red Cross what supplies are most urgent in each of the warring countries. It is a strict rule of the society that no administrative expenses are paid from the relief fund. During the last five months of 1914 there were received in behalf of the American Red Cross for European War relief $1,188,112; funds were transmitted amounting to $760,510, leaving a balance of $427,602, against which, however, there was charged $150,000 to support the personnel then abroad and to pay the expenses of their return.

National Relief. During the year the following amounts have been expended for the relief of sufferers from disasters within the United States: Texas floods, $10,585; Mississippi River flood, $5000; Ohio and interior floods, $23,465; Red Cross Christmas seals, sold in the crusade to stamp out tuberculosis in the United States, $1,800,000; fire in Salem, Mass., money raised for relief and rehabilitation and disbursed by the Massachusetts Red Cross State Board, $625,000. During 1914 there was an increase of 47 Red Cross chapters in the United States and an increase of Red Cross members of all classes of about 2500. The work of the First Aid Department was broadened by the organization of an American Red Cross Life Saving Corps. The Town and Country Nursing Service increased in efficiency and scope during the year. *The American Red Cross Magazine*, which was published quarterly during 1914, will appear monthly in 1915.

International Relief. The following sums have been expended in 1914 for the relief of sufferers from disasters outside of the United States and apart from the European War: relief of destitute Turks, $1009; Japanese famine and volcanic disaster relief, $10,500; relief incident to Mexican Revolution, $8412; Newfoundland sealing disaster, $5000; for study of flood and famine prevention in China, $2578; second Balkan War relief, Bulgaria, $18,000; Chinese river conservancy work, $75,000.

Administration The annual meeting of the society was held at Washington, D. C., Dec. 9, 1914. The president of the society, Woodrow Wilson, President of the United States, took the chair at one of the afternoon sessions. Reports from the various departments were read. One of the most important acts of the meeting was a decision not to solicit contributions hereafter for noncombatant relief in Europe, but to restrict American Red Cross activities in the European war zone chiefly to the relief of the sick and wounded of the armies of all the warring nations. The society will act as an intermediary, however, in transmitting to specified and approved organizations or persons any moneys received as donations for that purpose. The officers of the American Red Cross for 1915 are as follows: President, Woodrow Wilson, President of the United States; vice-president, Robert W. de Forest; national director, Ernest P. Bicknell; treasurer, John Skelton Williams; counselor, John W. Davis; secretary, Charles L. Magee. The five members of the Central Committee appointed by President Woodrow Wilson to represent the government were: Maj.-Gen. George W. Davis; Robert Lansing, Counselor of the Department of State; John Skelton Williams, Comptroller of the Currency; Surg.-Gen. William C. Gorgas; Rear Admiral W. C. Braisted; Sol.-Gen. John W. Davis. See HOSPITALS; and RELIEF FOR WAR VICTIMS.

REDUCTION WORKS FOR GARBAGE. See GARBAGE AND REFUSE DISPOSAL.

REFERENDUM. See ELECTORAL REFORM.

REFORM, ELECTORAL. See ELECTORAL REFORM.

REFORMED CHURCH IN AMERICA (DUTCH REFORMED). This denomination numbered, in 1913, 121,640 communicants, 707 churches, and 774 ministers. For administrative purposes it is divided into four particular synods and 35 classes. The Sunday Schools have an enrollment of about 150,000 pupils. The denomination contributes annually for benevolent objects about $500,000, and for congregational purposes, about $1,700,000. Its missionary work is conducted through the foreign missionary board, women's foreign mission board, and the domestic missionary board. The board of education and board of publication have general charge of educational and publishing interests.

REFORMED CHURCH IN THE UNITED STATES, known also as the GERMAN REFORMED CHURCH. This denomination had, in 1913, 306,337 communicants, 1776 churches, and 1210 ministers. The affairs of the denomination are administered by 8 district synods and 59 classes corresponding to the presbyteries in the Presbyterian bodies. The Sunday Schools contained about 250,000 scholars, and 125,000 teachers. The missions of the church are conducted in practically all the States of the Union and in Canada. Theological seminaries are maintained in Lancaster, Pa., and Dayton, Ohio. The colleges include Franklin and Marshall College, and Heidelberg College, at Tiffin, Ohio. Colleges for women are maintained at Frederick, Md., and Allentown, Pa.

REFORMED EPISCOPAL CHURCH. In this denomination there were, in 1913, 10,800 communicants, 80 churches, and 83 ministers. At the head of the denomination are six bishops. Domestic missions are carried on among the colored people of South Carolina, and foreign missions are maintained in India. The theological seminary is in Philadelphia, and in the same city is published the official organ, the *Episcopal Recorder*.

REFORMED PRESBYTERIANS. Under this title are included five branches, the Associate Reformed, South; the Reformed (Synod); the Reformed (General Synod); the Reformed (Covenanted); and the Reformed in the United States and Canada. The Associate Reformed South is the largest branch. It had, in 1913, 14,182 communicants, 154 churches, and 113 ministers. In the Reformed Synod were 9015 communicants, 110 churches, and 143 ministers. In the Reformed General Synod were 3400 communicants, 18 churches, and 16 ministers, the other branches being very small. The Reformed Presbyterian General Synod maintains two churches in India. The General Synod maintains a theological seminary in Philadelphia and a college at Cedarville, Ohio.

REFUSE DISPOSAL. See GARBAGE AND REFUSE DISPOSAL.

RELIEF FOR WAR VICTIMS. Following the outbreak of the European War it soon became evident that a most unusual problem in the way of caring for innocent victims of that great conflagration would confront the people of neutral countries. The invasion of Belgium especially had rendered probably 6,000,000 people homeless and had reduced one-fourth of that number to actual destitution. The military plans of the Germans resulted in the confiscation of available supplies, and most of the live stock of the country was likewise sacrificed to military needs. It was estimated that fully 700,000 Belgians found refuge in Holland, a condition which imposed upon the Dutch Republic a most extraordinary burden. Nearly every family in the Netherlands was reported to be caring for one or more refugees. The homeless from Belgium also flocked to England and France to the number of several hundred thousand, where they aggravated the problem of unemployment and imposed upon charitable and philanthropic agencies additional burdens. A condition not less heart-rending was created in Servia by the Austrian invasion there and the terrible devastation following violent efforts of both parties to hold possession of Servian territory. Likewise Russian Poland had suffered, first from a German invasion, then from the battles whereby the Russians drove the Germans back, and then again from the German campaign for the capture of Warsaw. Thus an extensive territory had been laid waste. It was estimated that nearly 2,000,000 Jews or one-sixth of the Jewish population of the world had by these campaigns been rendered homeless. Before the close of the year relief activities had been begun by Hebrews of America and elsewhere for their relief. In January it was reported that the Russian government had appropriated $50,000,000 for Polish relief work.

In the United States relief committees began to be organized in September, and before the close of the year a considerable number were in active operation. These committees duplicated each other only to a moderate extent since most of them, as is indicated below, were engaged in meeting special problems. The response of the American people to their appeals was instantaneous and generous. In nearly every State in the Union State committees were formed, and every city, even down to those of moderate size, had its local organizations. Numerous devices were resorted to for raising money, including newspaper appeals, endless-chain whist parties, bazaars, theatrical and musical benefits, and appeals through the churches and various kinds of organizations.

THE COMMISSION FOR RELIEF IN BELGIUM. This was the most extensive organization engaged in war relief activities, since it embraced all neutral countries within its activities. It was brought into existence by the American and Spanish Ambassadors at London and Ministers at Brussels, the American Ambassador at Berlin, and the American Minister at The Hague. These six constituted its honorary chairmen. It at once sought the permission of the belligerent powers and of Holland to ship food and other necessities into Belgium for the sole use of destitute noncombatants. England agreed to the passage through the North Sea of food consigned to the Commission; Holland agreed to permit exportation to Belgium; and Germany pledged herself not to commandeer supplies of the Commission. This pledge was strictly kept according to the Commission's handbook. The headquarters were at London, the chief American office was at 71 Broadway, New York City, and the Continental offices were at Rotterdam and Brussels. The purposes of the Commission were to secure foodstuffs from any quarter of the world through subcommittees, independent organizations, direct contributions, and purchases; to provide transportation from any point to Rotterdam and Brussels; and to safeguard foodstuffs in the belligerent area. Its organization included the American, Spanish, and Italian commissions of the same name, and the Comité National de Secours et d'Alimentation described below. This last, with headquarters at Brussels, and the American consuls in Belgium served as distributing agencies throughout the stricken country. The problem was large, as a portion of the daily food of nearly 6,000,000 had to be supplied; about 1,400,000 were destitute and required, in addition, all other necessities, especially clothing, blankets, and shelter. Wheat and flour were the largest items of necessities. It was estimated that from 80,000 to 90,000 tons of food per month, or a shipload every other day would be required to afford the necessary minimum of 10 to 12 ounces of bread per day for each inhabitant. The cost of this food, including transportation, was estimated at $3,000,000 a month.

The Commission was the trustee of two funds: one supplied by patrons and donors anywhere for the payment of transportation charges from givers of any country to Belgium; and the other provided by the Belgians themselves for the purchase of food supplies. Its resources were supplied also by the Belgian Relief Fund (see below), and a subsidy from the British government through Count de Lalaing. Because of its official recognition by belligerents, it was the sole agency through which food could enter Belgium. It thus made its chief function the organization of transportation. It therefore secured the coöperation of shipping firms in London and New York, and organized an extensive fleet of relief ships, and arranged for free transportation from any part of the world. The cost of such transportation was paid in large part by Belgian bankers and institutions. A statement issued December 28 showed that the Commission had received cash contributions to the amount of £1,222,414; food supplies valued at £74,210; and a transportation fund from Belgians amounting to £600,000. At that time there had been delivered at Rotterdam supplies from United States, Canadian, British, and Dutch ports valued at £734,267, of which value one-third was given by others and two-thirds purchased by the Commission. In addition, there had, on December 28, been arranged 38 cargoes from North and South America, Bangkok, and the United Kingdom, with a total value of £3,222,506. Of this value somewhat less than one-third was given by sources not included in the Commission. These supplies, including those already delivered and those arranged for, consisted of 75,470 tons of wheat; 39,079 tons of flour; 8030 tons rice; 3146 tons peas and beans; 6390 tons salt; 5444 tons maize; 2955 tons potatoes; 3049 tons sundry foodstuffs; and 1259 tons and 3577 packages of clothing and miscellaneous articles.

American Commission for Relief in Belgium. The most extensive organization in the United States was this branch of the Commission for Relief in Belgium, with Lindon W. Bates and Robert D. McCarter as executive officers, and with headquarters at 71 Broadway, New York City. Preceding its entrance into the American field about November 20, numerous relief organizations had been formed. It sought to bring these into harmonious coöperation and at the same time to extend organized effort over the whole country. It made direct appeals to each of the States to send a carload of food and other supplies to European War victims. It organized or affiliated with itself local relief committees to the number of more than 1000 in various parts of the country; and formed State executive committees in 36 States. It published a bulletin entitled *Food for Belgium*. About December 1, it was officially designated the sole agency for transmitting foods and supplies and had secured the active coöperation of the 65,000 Federal post offices as well as the six great express companies, Adams, American, Wells Fargo, Southern, Great Northern, and Northern. By the close of the year it completed arrangements whereby any private donor could ship supplies to any one of numerous assembling depots, at least one in each State, and receive reimbursement for shipping charges. It made arrangement for the collection of provisions at the following ports: New York, Philadelphia, Baltimore, Norfolk, Richmond, New Orleans, Portland, Seattle, and San Francisco. In its statement to the country it indicated that the articles most needed were: condensed milk for babies and children, bread, salt, flour, rice, potatoes, peas, beans, wheat, sugar, wooden shoes, boots, blankets, clothing, and oil cakes for the few cattle remaining. By the close of the year this organization had established a line of 31 steamships sailing between various American ports and Rotterdam. It was then preparing to dispatch eight cargoes valued at about $2,400,000. Gifts in money to the Commission up to the close of the year were about $800,000. The statement of the American Commission showed that 50,748 tons of cargoes had been shipped from New York, Philadelphia, and San Francisco up to December 31. At that time 30,880 tons were loading at New York, Philadelphia, Boston, Baltimore, and Norfolk; and 116,500 tons were being arranged for shipment in January or early February, 1915.

The American Commission had a *Woman's Section* with headquarters at 1 Madison Avenue, New York City. Mrs. Lindon Bates, Miss Anne Morgan, Mrs. August Belmont, Mrs. Edward R. Hewitt, Mrs. William K. Vanderbilt, Miss Mary Parsons, Miss Maude Wetmore, and Miss Grace Parker were its executive committee. Its organization included the presidents of numerous national and international women's societies, and presidents of State federations of women's clubs. It had committees in 23 States. Queen Elizabeth of Belgium and Princess Henriette, Duchess of Vendôme, acted as patronesses for the section.

The Comité National de Secours et d'Alimentation was created by business men of Belgium to organize and carry out an equitable distribution of food supplies throughout the cities and provinces of Belgium. Its head office was in Brussels; and it had branches in every province which coöperated with municipal and communal officials. It had numerous volunteer workers in Belgium and throughout England and America. It divided the Belgium population into three groups for convenience in food distribution: the absolutely destitute; working people of small means; and middle and upper classes. Destitute persons, after inquiry, were given free nontransferable tickets entitling them to rations twice daily at Communal canteens. Working people received the same ration but were required to pay 9 francs ($1.80) per month for tickets. The middle and upper classes were able to purchase food. Special canteens were provided for children. The Communal officers had complete control of the supply of flour and breadstuffs. They were required to pay to the Comité three francs per month for all tickets issued in their Commune; this was taken as a precaution to insure economy of resources.

BELGIAN RELIEF FUND. This fund was created by the Belgian Relief Committee, the pioneer Belgian relief organization in America; it began operations on September 10. Its president was Rev. J. F. Stillemans; the chairman of its executive committee was Robert W. de Forest; its treasurer, J. P. Morgan and Co.; and its head office at 8–10 Bridge Street, New York City. Its organization embraced numerous local committees, committees in every State, and in Cuba and Hawaii. It published the *Belgian Relief Bulletin*. This fund engaged in collecting cash, food, and other supplies, and forwarding same. After the American Commission for Relief in Belgium was organized, the fund was relieved of the cost of transportation, so that it claimed that for every dollar contributed 99 cents' worth of food was delivered into the hands of Belgian civilians. Up to the close of the year it had received $776,475 in cash, $700,000 in food, and $35,000 in clothing. It then stated that thereafter only cash contributions would be accepted. It thus constituted a reservoir for the pooling of cash gifts, and an expert food purchasing bureau.

ROCKEFELLER FOUNDATION. Another of the most important American relief agencies was the Rockefeller Foundation. This was one of the large endowments originated by John D. Rockefeller to which he had given $100,000,000. Its first important activity had been an effort to eradicate the hookworm disease in various Southern States and the creation of an International Health Commission to continue the same work in various tropical countries. It had also created the China Medical Commission to inquire into the need for medical education and public health work in China. It had appropriated $750,000 to Wellesley College because of a recent fire; $2,550,000 to the Rockefeller Institute for medical research; and $225,000 to purchase 85,000 acres of land on the Louisiana coast as a refuge for migratory birds. It had also recently organized an international investigation into industrial relations. (See under LABOR.)

In the way of immediate relief work the Foundation had appropriated $45,000 to the New York Association for Improving the Condition of the Poor, for widows' pensions, and general relief; and $20,000 to other New York and Brooklyn charities. In a statement issued on December 6th, the Foundation stated that it had purchased three shiploads of food at an expenditure of $1,000,000, to be sent to Belgium. It had in addition sent abroad a commission consisting of Wickliffe Rose, Henry James, Jr., and Ernest P. Bicknell, the latter being Director of the American Red Cross, to advise "where further relief to noncombatants may be most effectively provided." It also stated that it was ready to spend millions of dollars, if necessary, in that direction. The Foundation also provided a steamship pier, chartered vessels, and agreed to transport free all supplies that might be contributed toward Belgian relief. It was the principal aid of the above mentioned Commission in the transportation and distribution of supplies in Belgium.

OTHER FUNDS. Among the other organizations the principal ones together with the funds received by them up to December 30th, were as follows: the American Ambulance Fund for the American Hospital in Paris received $259,053. Its treasurer was J. P. Morgan and Co., 23 Wall Street, New York City. The Fund for the Relief of Women and Children of France, with Mrs. Whitney Warren, 16 East 47th Street, New York City, as chairman, had received $50,019. The American Jewish Relief Committee for Sufferers from the War, with Felix M. Warburg, 52 Williams Street, New York City, as treasurer, had received $252,465. The Dollar Christmas Fund, which had in view the purchase of Christmas gifts for homeless Belgians and of which Henry Clews was treasurer, was closed about December 30, with a total of $51,761. The War Children's Christmas Fund, of which Mrs. John Hays Hammond was treasurer, had sent extensive gifts, consisting mainly of warm clothing, to English children.

The Christmas Ship, the U. S. Collier *Jason*, sailed from New York, December 14, with 43 carloads of gifts for children in the various war areas. Ten per cent of the cargo was food, 30 per cent toys, and most of the remainder garments. The plan for this ship was originated by James Keeley of the *Chicago Herald*, and was carried out with the coöperation of 200 leading newspapers throughout the United States. Gifts came from every corner of the country, and 43 railroads, 6 express companies, and other corporations donated their services. The distribution of the gifts was carried out through the Red Cross in Belgium, Germany, France, Austria-Hungary, Servia, and Greece.

The Committee of Mercy Fund, Elihu Root president, and August Belmont, treasurer, 200 Fifth Avenue, New York City, had received $91,910. It was engaged in forwarding condensed milk, food, clothing, and other necessaries, especially for women and children. It was divided into various sections: general fund; Belgium fund; French fund; British fund; and American fund. The Vacation War Relief Committee, with Miss Anne Morgan as treasurer, had received nearly $25,000. The Prince of Wales National Relief Fund in this country, Mr. R. M. Stuart Wortley, treasurer, 25 Broad Street, New York City, had received approximately $100,000. (See below for British section.) The American Woman's War Relief Fund, of which Lady Paget was president, and which controlled the American Hospital at Paignton, England, with Brown Brothers and

Co., 59 Wall Street, New York City, as American treasurer, was a branch of an English organization of which the Duchess of Marlborough was head. She announced a total of nearly $200,000 at the close of the year. The Lafayette Fund was engaged in forwarding comfort kits to French soldiers. In December a 10 days' charity bazaar in a New York armory netted nearly $200,000 for the benefit of German and Austrian soldiers. There was also the American Committee for the Relief of Babies of Belgium, located at 2 West 45th Street, New York City. The American Ambulance Hospital at Paris was supported by cash gifts and the proceeds of dances and other social events. The Mayfair Association was engaged in distributing clothing and other supplies in France.

The International Red Cross had begun its extensive efforts in behalf of the wounded at the very outbreak of the war. Physicians and nurses from every nation were enlisted and hospital supplies furnished. The American Red Cross received contributions up to December 30 of about $425,000, but the use of any part of this in distinctly civilian relief work was incidental to its military hospital activities.

Great Britain. Relief activities of a similar sort sprang up in Great Britain. Thus the *Times* of London solicited contributions to a Fund for the Sick and Wounded. This met with a generous response, and on December 25 had reached the grand total of £788,708, and was increasing at the rate of £25,000 to £30,000 per week. This fund consisted of special donations for particular purposes in addition to large amounts which were turned over to a Joint Committee of the British Red Cross Society and the Order of St. John. Thus among the special donations was a gift of £23,000 by the United Kingdom Flour Millers, which was used to provide two hospital trains for service with the allied forces in France and Belgium. The Order of St. John supported various hospitals and coöperated with the Red Cross Society in military relief. The English Red Cross was generously assisted also by Red Cross Societies in various British colonies. Thus the Canadian Red Cross Society had, up to December 18, donated £22,000 for a Canadian hospital at Clieveden, for a hospital train in France, and for the general purposes of the Red Cross Society.

Various other funds, known as the Royal Funds, had been organized. Of these the largest was the Prince of Wales National Relief Fund organized for the purpose of insuring families of enlisted men a minimum subsistence. On December 25 it amounted to £4,188,000. The Queen of England had organized a Work for Women Fund which amounted to £100,000. Its purpose was to organize employment for needy women affected by war conditions. The Princess Mary's Fund to provide Christmas gifts for army and navy reached the sum of £153,200. There was also collected an Indian Soldiers' Fund amounting to more than £110,000. There were numerous other more private relief funds and organizations.

The British Women's Emergency Corps was organized shortly after the outbreak of the war by women who wanted to be of every possible assistance. It established an employment department to secure work for shop girls, clerks, typists, seamstresses, and others who had lost their positions through the war. It sought also to get contracts for workshops almost ready to shut down; and it opened several relief work rooms. It had a surplus food department which secured food from hotels, clubs, and markets. Its interpreting department assisted in the courts, at railway stations, and at ports in caring for the refugee aliens. It had a nursing department, a hospitality department, and numerous other activities.

RELIGIOUS DENOMINATIONS AND MOVEMENTS. Statistics of the religious denominations in the United States in 1914 were covered by Dr. H. K. Carroll for the Federal Council of the Churches of Christ in America. The general results of this investigation are given in the table below, with statistics covering the territory of the United States only. Ministers, churches, and communicants of various denominations in foreign countries are deducted from the denominational totals. Where denominational official returns are made they are used, and where such returns are not to be had, the best denominational sources of information are sought for approximate figures. In some cases the census returns for 1906 are the latest and the only ones available.

A word is necessary in connection with the figures for the Roman Catholic Church. The *Official Catholic Directory* reports only "population," which includes with communicants the unconfirmed baptized; that is, children who have not been admitted to confirmation. The rule followed in the census 1906 deducts 15 per cent from Catholic population and sets down the remaining 85 per cent as communicants. Representatives of that church object to this method, but as the rule to report only members or communicants is applied to all other denominations, there seems to be no convenient way of making an exception in this case.

The figures for members of the Jewish faith are misleading. There are no official statistics and nothing later than the figures gathered directly by circular from congregations by the government in 1906 is obtainable. The census gives an even smaller number of members than this table, counting only heads of families, according to the Jewish rule. The number of adults connected with Jewish congregations must exceed 700,000. Certain small churches, including the Christian Catholic Church and the Catholic Apostolic Church, give no statistical information. The Church of Christ Scientist has furnished no returns for members since 1907.

The grand total of communicants for 1913 was swelled by an abnormal increase reported by the Roman Catholic Church. A great body of Ruthenian Catholics, numbering about 500,000, not included in the returns of previous years, were put into the tables. Making allowance for this addition, the churches in general had as good a year in 1914 as in 1913. The churches included in the Federal Council, which includes all the larger denominations, had a net increase of upward of 502,000, or nearly 3 per cent, which is above the average. The Methodist Episcopal Church had an even larger increase than in the previous year. The Disciples of Christ report an unusually small gain —less than 500. This is explained as due to a continued separation of conservative brethren, known as the Churches of Christ, and more exact reports in place of estimates. Both the Lutheran and Presbyterian groups show a larger increase in 1914 than in 1913. In the totals, the gains in the number of ministers were considerably more than double those of 1913, while the churches show an increase of less than half that of the previous year.

The following table gives the summary for 1914 with the net gain over the preceding year.

	Summary for 1914			*Net Gains for 1914*		
Denominations	*Ministers*	*Churches*	*Communicants*	*Ministers*	*Churches*	*Communicants*
Adventists (6 bodies)	1,169	2,579	98,927	*d* 10	32	105
Baptists (15 bodies)	42,710	57,537	6,179,622	672	290	122,125
Brethren (Dunkards, 4 bodies)	3,433	1,289	121,475	39	16	2,015
Brethren (Plymouth, 4 bodies)	....	403	10,566	...	...	....
Brethren (River, 3 bodies)	224	105	4,903	...	...	....
Buddhist (2 bodies)	15	74	3,165	...	...	....
Catholic Apostolic (2 bodies)	33	24	4,927	...	...	....
Catholics (Eastern Orthodox, 7 bodies)	342	399	458,500	55	64	36,500
Catholics (Western, 2 bodies)	19,068	15,055	13,313,137	468	366	189,350
Christadelphians	....	70	1,412	...	...	....
Christians	1,066	1,360	118,887	*d* 68	178	10,985
Christian Catholic (Dowie)	35	17	5,865	...	...	...
Christian Scientists	2,672	1,336	85,096	84	42	....
Christian Union	308	272	14,807	...	...	....
Churches of God (Winebrennarian)	509	595	41,475	...	...	....
Churches of the Living God (Colored, 3 bodies)	101	68	4,286	...	...	....
Churches of the New Jerusalem (2 bodies)	143	147	9,671	6	1	70
Communistic Societies (2 bodies)	....	22	2,272	...	...	....
Congregationalists	6,091	6,129	755,088	25	38	4,985
Disciples of Christ (2 bodies)	8,261	11,143	1,519,821	569	*d* 582	452
Evangelical (2 bodies)	1,569	2,598	190,298	30	*d* 2	3,248
Faith Associations (9 bodies)	241	146	9,572	...	...	....
Free Christian Zion Church	20	15	1,835	...	...	....
Friends (4 bodies)	1,476	1,167	124,216	...	...	....
Friends of the Temple	3	3	376	...	...	....
German Evangelical Protestant	59	66	34,704	...	...	....
German Evangelical Synod	1,058	1,365	290,803	7	20	29,815
Jewish Congregations	1,084	1,769	143,000	...	...	....
Latter-Day Saints (2 bodies)	3,610	1,570	361,000	50	50	5,000
Lutherans (21 bodies)	9,450	16,220	2,444,970	256	210	56,248
Scandinavian Evangelical (3 bodies)	629	857	72,900	...	...	....
Mennonites (12 bodies)	1,418	736	57,337	...	...	....
Methodists (16 bodies)	41,525	62,416	7,328,829	396	265	231,460
Moravian (2 bodies)	147	148	20,615	1	...	152
Nonsectarian Bible Faith Churches	50	204	6,396	...	...	....
Pentecostal (2 bodies)	802	733	28,946	77	90	5,009
Presbyterians (12 bodies)	14,066	16,884	2,083,617	326	188	56,019
Protestant Episcopal (2 bodies)	5,629	8,002	1,026,048	102	103	28,641
Reformed (4 bodies)	2,177	2,770	478,951	9	7	15,265
Reformed Catholic	7	6	3,250	...	...	....
Salvationists (2 bodies)	2,967	924	27,893	177	35	419
Schwenkfelders	5	6	1,089	*d* 1	...	39
Social Brethren	15	17	1,262	...	...	....
Society for Ethical Culture	7	6	2,450	...	...	....
Spiritualists	....	2,100	200,000	...	100	....
Theosophical Society	....	154	4,714	...	9	525
Unitarians	524	475	70,542	*d* 7	*d* 2	....
United Brethren (2 bodies)	2,260	4,086	343,016	*d* 4	*d* 30	14,917
Universalists	650	717	52,000	*d* 52	3	284
Independent Congregations	267	879	48,673	...	...	....
Grand Total for 1914	178,290	225,613	38,708,149	3,212	1,441	763,078
Grand Total for 1913	175,078	224,172	37,945,071	1,282	2,910	1,820,604

d Decrease.

See LITERATURE, ENGLISH AND AMERICAN, *Religion*.

RELIGIOUS EDUCATION. See UNIVERSITIES AND COLLEGES.

RENNENKAMPFF, PAUL CHARLES VON. See WAR OF THE NATIONS.

RESERVOIRS. See AQUEDUCTS; DAMS; and IRRIGATION.

RESISTANCE. See PHYSICS.

RESONANCE SPECTRA. See PHYSICS.

RÉUNION (BOURBON). An island in the Indian Ocean; a French colony. Its area is 1980 square kilometers (754 square miles), carrying a population in 1911 of 173,822. Attached administratively to Réunion are St. Paul (7 square kilometers), New Amsterdam (66), and Kerguelen (3414). Saint-Denis, with 25,689 inhabitants, is the capital. There are 126 kilometers of railways. Imports 1912, 20,683,615; exports, 16,111,723. The budget for 1911 balanced at 4,823,000 francs; the debt stood Jan. 1, 1912, at 13,457,000 francs. Governor, 1914, M. Cor.

REVENUE. See articles on various countries; on States of the United States; and UNITED STATES.

REVOIL, PAUL. A French diplomat, died April 29, 1914. He was born in 1856, entered the diplomatic service early in life, served as French Minister to Tangier, and in 1901 as Governor-General of Algeria. In 1905 he was appointed Ambassador to Switzerland, in the following year became Ambassador to Spain, and was head of the French delegation to the International Moroccan conference. In the early part of his career he was Under Secretary of State for the Colonies, for Foreign Affairs, and for Agriculture.

REYBURN, JOHN EDGAR. An American public official, died Jan. 4, 1914. He was born in New Carlisle, Ohio, in 1845, and was educated at the Saunders Institute in Philadelphia, Pa. After graduation he took up the study of law, and was admitted to practice in the Philadelphia bar in 1870. In the same year he was elected Representative to the State Legislature, where he served until 1876, when he was elected to the State Senate. He was a member of Congress from the Fourth Pennsylvania District from 1890 to 1897, was reëlected to the Fifty-ninth Congress 1905 to 1907 for an unexpired term, and to the Sixtieth Congress from 1907 to 1909. On his election as Mayor of Philadelphia in 1907, he resigned from Congress. During his term of office as mayor he was identified with the Republican machine which controlled the affairs of the city.

REYMOND, Emile. A French surgeon, aviator, and senator, died in the Eastern part of France, between the French and German battle lines, in October, 1914. He was born at Tarbes, April 9, 1865, the son of the eminent French engineer, Francisque Reymond. After completing his medical and surgical education he soon acquired a large practice, and published several surgical works. After the death of his father he was elected senator of the department of the Loire. He was among the first to perceive the possibilities of aviation and in the senate spoke and worked in its behalf. On Aug. 9, 1910, he passed his examination for pilot, later made numerous flights across France, and even made his electoral campaign in an aëroplane. The same year he was appointed head of the National Aviation Committee of France, and made strong efforts to provide 700 aëroplanes for the aviation branch of the French army. He believed in the great usefulness of the aëroplane to the health service in searching for the wounded on the battlefield after action. When the war in Europe broke out, Reymond was a major of the first class in the military health service, was transferred to the aviation corps and sent to the firing line. Wounded while reconnoitring in an aëroplane above the German lines, he nevertheless controlled his machine so that he brought it safely to the ground, was removed in a French ambulance, and gave an accurate report of the observations which he had successfully made. He received the decoration of the Legion of Honor at his bedside and died shortly afterward.

RHODE ISLAND. Population. The estimated population on July 1, 1914, was 591,215. The population in 1910 was 542,610.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	11,000	462,000	$458,000
	1913	11,000	402,000	398,000
Potatoes	1914	5,000	825,000	578,000
	1913	5,000	650,000	585,000
Hay	1914	58,000	*a* 68,000	1,374,000
	1913	58,000	68,000	1,442,000

a Tons.

Mineral Production. The only mineral products of Rhode Island are stone, mineral waters, lime, amorphous graphite, soapstone, coal, and the manufactures of clay. The total value of the mineral products in 1913 was $813,952, of which the quarries contributed $643,995. In 1912 the total value was $942,842, of which the quarries contributed $768,067.

Transportation. The total mileage of main and branch railroad lines within the State in 1913, was 211, and the total length of all railroad tracks was 468. The total mileage of roads, operated by railroad corporations which either owned or operated within the State, was 2097 miles. The aggregate capital stock of railroad companies either owning or operating lines in the State was $49,816,400.

Education. The total school population of the State in 1914 was 107,645. The total enrollment in the public schools was 84,327, and the average daily attendance was 66,896, the female teachers numbering 2261 and the male 208. The average yearly salary of male teachers was $1312.80, and of female teachers, $626.14.

Charities and Corrections. The Board of Charities has control of the following institutions (the population of these in 1914 is given in parentheses): State Hospital for the Insane (1319); House of Corrections (345); State Almshouse (579); State Prison and Providence County Jail (529); Sockanosset School for Boys (342); Oaklawn School for Girls (49). The Rhode Island School for Feeble-Minded is under the control of the Board of Education.

Finance. The report of the State Treasurer for the fiscal year ending Dec. 31, 1913, showed a balance on January 1 of that year of $68,020; the receipts for the period amounted to $3,459,251, and the payments to $3,511,513, leaving a balance in the treasury on Dec. 31, 1913, of $15,758. The funded debt of the State on Jan. 1, 1914, was $5,830,000, and there was a sinking fund of $788,428, leaving a net debt of $5,041,571.

Politics and Government. The State Legislature met in 1914 as the sessions are annual. Elections were held for Governor, the Republicans nominating R. L. Beeckman, and the Democrats P. H. Quinn. In the elections on November 3 the Republicans were successful in electing their candidate, Mr. Beeckman, by a vote of 41,996, compared with 32,182 for Quinn, and 1256 for Thompson, Progressive. The total vote cast was 82,300, compared with 82,445 in 1912. The Republican vote showed an increase of about 7900 votes, the Democratic vote a decrease of about 550, and the Progressive vote a decrease of about 7200. The Democrats elected representatives to Congress in one district and the Republicans in two.

State Government, 1914. Governor, R. Livingston Beckman; Lieutenant-Governor, Emery J. San Souci; Secretary of State, J. Frederick Parker; Attorney-General, Herbert A. Rice; Treasurer, Walter A. Read; Adjutant-General, Charles W. Abbott, Jr.; Auditor, Charles C. Gray; Commissioner of Public Schools, Walter E. Ranger; Commissioner of Insurance, Charles C. Gray—all Republicans.

Judiciary. Supreme Court: Chief Justice, Clarke H. Johnson; Associate Justices, C. Frank Parkhurst, W. B. Vincent, William H. Sweetland, Darius Baker; Clerk of the Court, B. S. Blaisdell—all Republicans.

State Legislature, 1913.

	Senate	*House*	*Joint Ballot*
Republicans	32	56	88
Democrats	7	38	45
Progressives	0	4	4
Republican majority	25	14	39

The representatives in Congress will be found under the section *Congress*, article United States.

RHODESIA. A country (named for Cecil

Rhodes), under the administration of the British South Africa Company; a British protectorate which is divided into Northern Rhodesia (estimated area, 291,000 square miles; estimated population, 1,001,400) and Southern Rhodesia (148,575 square miles, 769,471 inhabitants). Administrator for the British South Africa Company (1914), Sir William Milton.

NORTHERN RHODESIA was formerly divided into two provinces—Barotseland (Northwestern Rhodesia) and Northeastern Rhodesia—amalgamated by an order in council of May 4, 1911, under the title Northern Rhodesia. Lewanika, the native king, chief of the Barotse, resides at Lealui; the administrator for the British South Africa Company (L. A. Wallace in 1914) resides at Livingstone.

SOUTHERN RHODESIA includes the provinces of Mashonaland (European population, 12,631) and Matabeleland (10,975). The native population numbers 744,559—495,451 in Mashonaland. Salisbury is the capital, with a white population of 3479. Bulawayo (5200 white inhabitants) is the commercial centre; other towns are Hertley, Gatooma, Umtali, and Victoria in Mashonaland, Gwelo and Sulukwe in Matabeleland.

PRODUCTION, COMMERCE, ETC. The country is well adapted to stock raising and agriculture. Soil and climatic conditions favor the growth of European cereals and vegetables. Gold has been mined from medieval times. The output in 1913 was 689,954 fine ounces, valued at £2,903,267. Coal output 1913, 243,328 tons; silver, 142,389 ounces; lead, 327 tons; diamonds, 9558 carats; chrome iron ore, 279,651 tons. Imports and exports for the year 1912 were valued at £2,979,006 and £3,181,998, respectively. Revenue 1912–13, £757,733; expenditure, £884,632.

RAILWAYS. The total length of the Rhodesian Railway systems (including the Beira Railway) at the end of 1912 was 2357 miles. Through connection exists between Cape Town and Beira, over 2000 miles. Branches extend to the mining-districts and to the burial place of Cecil Rhodes in the Matopos. The extension of the Salisbury-Jumbo Mine line was completed to Shamva on April 23, 1913.

RICE. The world's annual rice production ranges approximately from 150 to 175 billion pounds of the cleaned product. The production of rough rice at 45 pounds per bushel of some of the principal rice-growing countries in 1914 was estimated as follows: British India, 1,400,000,000 bushels; Japan, 400,000,000 bushels; Italy, 49,000,000 bushels; and Spain, 9,800,000 bushels. China, which is the leading rice country of the world, does not publish complete statistics or estimates. Of the countries mentioned, Spain ranked first in average yield per acre with 98 bushels, and British India last with 20 bushels. The production of Japan represented 114.6 per cent, and that of Spain 87.7 per cent of the crop of 1913, while in the other countries it was practically 100 per cent as compared with the preceding crop. The rice production of the United States in 1914, due to a reduction in acreage, was over 2,000,000 bushels less than in 1913, which was a record year in acreage as well as yield. In 1914, according to data published by the Department of Agriculture, the production amounted to 23,649,000 bushels, as compared with 25,744,000 bushels in 1913. The area devoted to the crop for the two years was 693,530 and 827,100 acres, and the average yield per acre 34.1 and 31.1 bushels, respectively. The total value of the 1914 crop, based on a value of 92.4 cents per bushel, the average price paid farmers on December 1, amounted to $21,849,000, which was exceeded only in the years 1912 and 1913. In bringing about this comparatively high value of the crop, the reduced acreage was largely offset by an increase of 3 bushels in the average yield per acre, and of 6.6 cents in the price per bushel, as compared with the preceding year.

RICHARD, ERNST D. An American lecturer and peace advocate, died Nov. 20, 1914. He was born at Bonn, Germany, in 1859, and graduated from the Gymnasium in that city in 1879, afterwards studying at the universities of Marburg and Bonn. He came to the United States in 1883, and from 1890 to 1897 was principal of the Hoboken Academy. He took the degree of Ph.D. at New York University in 1894. From 1903 to the time of his death he was lecturer on the history of German civilization at Columbia University; was active in world-peace movements founding the German-American Peace Society in 1904, and the New York Peace Society in 1906. He was author of: *History of German Civilization* (1911); and contributed to American and German magazines.

RICHARDSON, JAMES DANIEL. Former Congressman from Tennessee, died July 24, 1914. He was born in Rutherford Co., Tenn., in 1843 and was educated at the country schools and at Franklin College, leaving the latter institution before graduating, to enter the Confederate Army as a private. He served for three years as adjutant of the Forty-fifth Tennessee Infantry, and after the war began the practice of law at Murfreesboro, Tenn. He was a member of the Tennessee Legislature in 1871–72, and in 1873–74 was State Senator. He was a delegate to the Democratic National Conventions of 1876, 1896, and 1900, being permanent chairman of the latter. In 1885 he was elected to Congress and was reëlected for successive terms' until 1905. In the Fifty-sixth and Fifty-seventh Congresses he was Democratic nominee for Speaker of the House. He was chairman of the National Congressional Committee for several years, and was a very prominent member of the Masonic Order. He edited and compiled: *Messages and Papers of the Presidents*, and *Messages and Papers of the Confederacy*.

RICHARDSON, RUFUS BYAM. American archæologist and educator, died March 10, 1914. He was born in Westford, Mass., in 1845 and graduated from Yale College in 1869, studying at the Yale Divinity School from 1869 to 1872, and for the two years following in Berlin. From 1880 to 1882 he was professor of Greek at Indiana University, and from 1892 to 1893 held the same chair at Dartmouth College, and was director of the American School of Classical Studies at Athens, Ga., from 1893 to 1903. While he held this post he directed excavations in many important sites in Greece, including Corinth and Eretria. He was a member of many archæological and geographical societies, both in the United States and foreign countries, and was the author of: *Vacation Days in Greece* (1903); *Greece Through the Stereoscope* (1907); *History of Greek Sculpture* (1910);

also contributing to leading periodicals and to the *American Journal of Archæology*. In the latter journal he published from 1892 to 1902 about 20 articles relating chiefly to the excavations of the American School at Eretria and Corinth.

RICHARDSON, William. Representative in Congress from Alabama, died March 31, 1914. He was born in Athens, Ala., in 1841. He served in the Confederate Army and was severely wounded at the Battle of Chickamauga. He was admitted to the bar in 1867, and practiced in Huntsville, Ala. From 1865 to 1867 he was a representative in the General Assembly of Alabama, and from 1875 to 1886 was judge of the court of probate and county court, of Madison Co. He was elected to fill an unexpired term in the Fifty-sixth Congress, and was elected to successive Congresses up to and including the Sixty-third. He was delegate-at-large at the Democratic National Convention in 1904.

RIIS, Jacob Augustus. An American civic reformer and journalist, died May 26, 1914. He was born in Ribe, Denmark, in 1849, and was one of a family of 14 children. In 1870, having worked as a newspaper writer and a carpenter's apprentice, he landed in New York City, and after several years' hardship in attempting to earn a living, he became a reporter for the New York *Sun*. His work had chiefly to do with the police headquarters and police courts, where the conditions which he saw in tenement houses led him to begin the fight to remedy these. His first efforts were directed to the abolition of the police lodgings which were in a deplorable condition, and with the support of Theodore Roosevelt, who at that time was police commissioner, this result was accomplished. Mr. Riis then began his efforts to improve the tenement house situation, and wrote a book which was widely read, entitled *How the Other Half Lives*. In the period from 1877 to 1897 he worked unceasingly for the city's welfare; a history of this period is given in his book, entitled *The Ten Years' War*. He also was responsible for a number of small parks taking the place of some of the worst spots in the city. He labored for years to have more schoolhouses built, and compelled indifferent city officials to concede the reforms which he suggested or approved. Among the important results accomplished through his efforts was the purchase of the Croton watershed as a water supply for the city, after he exposed the contaminated state of the water which the city was previously using. He brought about the destruction of rear tenements and enforced the obliteration of Mulberry Bend, the worst tenement block in the city, the space being turned into a park. He fought for and secured a truant school; drove bake-shops out of tenement basements; worked for the abolition of child labor, and when a law was enacted, compelled its enforcement. Playgrounds for schools and the opening of school-rooms to boys' and girls' clubs were brought about largely through his efforts. President Roosevelt, with whom he was associated for years, said of him, "He is a man who acts squarely, works hard, wears no sour visage and not only holds high ideals but fights for them; and he carries on no rose-water revolutions." Mr. Riis declined many offers to hold public office. He wrote many articles for magazines on social and economic subjects, and was also a well-known lecturer. Among his published writings, in addition to those mentioned above, are: *The Children of the Poor* (1892); *The Making of an American* (autobiography, 1901); *The Battle with the Slum* (1902); *Children of the Tenements* (1902); *The Peril and the Preservation of the Home* (1903); *Theodore Roosevelt, Citizen* (1904); *The Old Town* (1909).

RIO TÉODORO. See Exploration, *South America*.

RITUAL MURDER TRIAL. See Jews and Judaism.

ROADS AND PAVEMENTS. Throughout the United States immense sums were spent during the year for highway improvements by States and counties, besides all the road and street work being done by towns and cities. Massachusetts and New Jersey continued on a moderate scale the State construction and State aid which they began many years ago as pioneers. New York spent a portion of its second $50,000,000 road bond issue. Ohio let $7,500,000 worth of State highway contracts, and other States spent money more or less lavishly for roads. In general, the State and county funds went for water-bound or bituminous-bound macadam, bituminous concrete, and gravel, but some went for brick, and some for concrete surfaces.

According to J. E. Pennybacker, Chief of Road Economics, United States Office of Public Roads (*Engineering Record*, Jan. 2, 1915), 18,000 miles of roads were surfaced in the United States at a cost of about $225,000,000, of which $42,500,000 was from State funds. All the States of the Union, save only South Carolina, Georgia, Florida, Tennessee, Indiana, and Texas, had some form of State highway department, and of the 42 States having such, 30 had granted State aid. Late in 1913 the Federal government began, and in 1914 it continued the construction of 17 post roads, which will have a total length of 464 miles, and will cost about $1,500,000. Of this sum the Federal government pays one-third, and States and localities two-thirds. One of these post roads is a part of the old National Road. It extends west 24 miles from Zanesville, Ohio, and is being surfaced with concrete.

A growing feature of city pavements was the use of smaller granite blocks than formerly, with carefully cut vertical edges, and the blocks laid with close joints. After four years of study of the subject, and observation of such pavements laid in New York and elsewhere, a committee of consulting engineers in the employ of New York City drew up specifications for small close-jointed granite block pavements. These specifications call for carefully dressed blocks not less than 6 nor more than 10 inches long, not less than 3½ nor more than 4¼ inches wide, and about 5 inches deep, laid close together and with either coal tar or asphaltic paving cement as a joint filler. Still smaller blocks, cubical in shape, and about 3½ inches on a side, laid on a sand or stone chip cushion resting in turn on concrete had been used extensively in British and Continental European and in South American cities for some years past, and were coming into use in the United States. The blocks are machine cut. Standard paving specifications, recommended by committees which had given the subject long study, were adopted by the American Society of Municipal Improvements in October, 1914, and were to be printed for distribution (C. C. Brown, secretary, Indianapolis, Ind.). The specifications included stone block, brick, concrete, broken stone and gravel, the last with bituminous surface, bituminous macadam, and asphalt. Progress reports on specifications for wood block and for bituminous concrete were made. Road Congresses were held at Atlanta and at Chicago. For various road statistics, road legislation, officials, etc., see *Good Roads Year Book* of the American Highway Association. See also STREET CLEANING AND SNOW REMOVAL.

ROBERTS OF KANDAHAR, PRETORIA, AND WATERFORD, FREDERICK SLEIGH, first EARL. An English soldier, died Nov. 14, 1914. He was born in Cawnpore, India, on Sept. 30, 1832, the son of Gen. Sir Abraham Roberts, who was at the time in command of a regiment in India. When two years of age Frederick Roberts was taken to England by his parents, and at the age of 13 was sent to Eton for a year. In January, 1847, he entered Sandhurst, and on Dec. 12, 1851, after two years at Addiscombe, he was commissioned second lieutenant in the Bengal Artillery. He landed in Calcutta in April of the following year, for a year following served as aid to his father, and as battery officer, and in 1854 was commissioned in the Bengal Horse Artillery.

The news of the great Indian mutiny of 1857 reached Peshawar, where Roberts was at the time stationed, on May 12 of that year. His first service was as staff officer to the Movable Column operating against the mutineers in the Punjab, but toward the end of June he joined the Delhi Field Force, in which he did excellent service as deputy-assistant-quartermaster-general with the artillery. Even more notable were his services in the relief of Lucknow; although hardly more than a boy, he was chosen by Sir Colin Campbell to guide the relieving force from Alambagh to the Dilkusha. After the relief of Lucknow, Roberts was attached to a cavalry division, and in a cavalry charge at Khudaganj in January, 1858, he won the Victoria Cross. On account of ill-health, he returned to England in 1858, was married in 1859 to Miss Bews of Waterford, and set out in the same year for India again.

His subsequent career was most active. He took part in the Abyssinian campaign of 1868 as assistant-quartermaster-general to Stewart's Bengal Brigade; and as a reward for his services was sent home with dispatches, and brevetted lieutenant colonel. He made the arrangements for the Lushai Expedition, 1871–72, which he accompanied, and on his return became deputy-quartermaster-general in Bengal, and in 1875, quartermaster-general and colonel.

The advance of Russia in central Asia was at this time causing great alarm to the British government. It was a problem which specially concerned Roberts as quartermaster-general in India. In March, 1878, he was in command of the Punjab Frontier Force. This was a step downward in rank, but offered unequaled chances of active service. A few months later, the repulse of a British mission, following the welcome given to a Russian general at Kabul, brought matters to a rupture with the Ameer of Afghanistan. The British at once began preparations against that country. Three columns were formed: one to advance on Kandahar by the Bolan; one to make a demonstration in the Khyber, and the third to threaten Kabul from the Shutargardan. The last column was entrusted to Roberts, and consisted of about 1300 British and 4000 native soldiers, with 13 guns. The advance was begun on Nov. 20, 1878. Roberts was obliged to leave one-third of his men behind as he moved up the Kuram Valley. Near its head he found eight regiments of Afghan troops in a strong position, but after a sharp struggle the pass was won. On May 26 of the following year a treaty of peace was signed with Yakub Khan. The treaty conceded all the British demands. Roberts, however, thought the treaty insecure, and returned to India with many misgivings.

On September 5, news of the massacre of the Cavagnari mission at Kabul reached Simla, where Roberts had taken his seat on the Army Commission. The force he had left behind in the Juram was the only one available to strike at Kabul. This was reënforced and he hastened back to command it as lieutenant general. Arriving at Charasia, about 12 miles south of Kabul, he found the enemy in force, and in a strong position. He routed them, however, and Kabul fell into his hands without further fighting. He was now placed in command of all the troops in Afghanistan, which gave him the control of 20,000 men, but of these only 8000 were in the neighborhood of Kabul. On December 11 he withdrew to Sherpur, where he was surrounded by a force of Afghans estimated at 100,000 men. For 10 days he was besieged by this force, but on December 23, following a furious assault upon the cantonment, the Afghans were defeated and put to flight. In the latter part of July of the next year, hostilities ceased, and orders were issued for the British troops to return to India. On July 27, however, came news of the disaster of Maiwand. A British brigade under General Burrows was here defeated by Ayub Khan. The British, deserted by the troops of their ally, and greatly outnumbered by the Afghans, 2500 in number, were routed, losing 1000 out of 2500 British troops engaged. As a result, Lieutenant General Primrose found himself besieged in Kandahar. Roberts proposed that he should lead a column from Kabul. This was approved, and accordingly he set out on August 9 with a specially selected force of 10,000 men, and his newly organized transport corps. On the 31st he arrived at Kandahar, a famous march of 313 miles in 23 days. The next day in the battle of Kandahar, he completely defeated the Ayub Khan's army.

For his services in the Afghan campaigns, Roberts received the thanks of both Houses of Parliament, and was made a baronet. He was now appointed to the command of the Madras army, but before taking up this appointment, went to England on leave. While at home, news was received that Sir George Colley and 600 British troops, who had occupied Majuba Hill, in Northern Natal, on the night of Feb. 26, 1881, had been defeated the following morning by the Boers under Piet Joubert, and Colley killed. To check the possibly serious consequences of this disaster, Roberts was appointed Governor of Natal, and commander-in-chief in South Africa, but on arriving at Cape Town he found that peace had been made. He went back to England, and declining the post of quartermaster-general, returned to India, where, in 1885, he became commander-in-chief. This post he held for seven years, instituting many measures for the benefit of the army, and greatly developing the important subject of frontier defense and communication. In 1886 he took command for a time of the forces in Burma, for the suppression of dacoity. On Jan. 1, 1892, he was raised to the peerage as Baron Roberts of Kandahar and Waterford, and returned to England in 1893. After his return to England he had two years of leisure, which he employed in writing a remarkable book of reminiscences, entitled *Forty-one Years in India*. In May, 1895, he was made field marshal, and in October of that year became commander-in-chief in Ireland.

After the failure of the British in South Africa in 1899, Lord Roberts was sent out as commander-in-chief. Arriving at Cape Town in January, 1900, he proceeded on Bloemfontein. The sieges of Kimberley and Ladysmith were raised, Cronje overtaken, and forced to surrender at Paardeberg (February 27), Bloemfontein entered (March 13), Mafeking relieved May 17, and Pretoria occupied in June. On his return to England in 1901, Roberts was given the Garter, and advanced in the peerage as Earl Roberts of Kandahar, Pretoria, and Waterford. For his services in South Africa he received the thanks of both Houses of Parliament, and a grant of £100,000. He had in the meantime been appointed commander-in-chief of the army. He at once began to initiate reforms in army administration, but as the result of reorganization of the army, the office of commander-in-chief was abolished in 1903, and on February 18 of that year the retirement of Lord Roberts was officially announced. At the request of the Prime Minister, Lord Roberts continued to be a member of the Imperial Defense Committee after he had ceased to be commander-in-chief. He was unable to secure the support of the several ministries under which he served in his plans for the extension of the army, and in December, 1905, he resigned and became president of the National Service League, organized for the purpose of bringing about universal training for home defense. On Sept. 30, 1912, when he had reached the age of 80 years, he was given £5000 as a birthday gift. The bulk of this money was devoted to the work of the National Service League.

Lord Roberts had for years prior to the breaking out of the European War pointed out the precise conditions which were found to exist at the beginning of hostilities. His efforts to arouse the sentiment for a larger army were unceasing. When the war really began he became a resolute and alert supporter of the government. He took an active part in the work of collecting ammunition and equipment for the troops, and he was in constant consultation with the war office. His interest in the Indian troops inspired him to visit the detachments in France, where he was received with the greatest enthusiasm; but the exposure and excitement led to an attack of pneumonia which caused his death. Lord Roberts was the idol of the army, and was hardly less popular with the general public. He was universally known by the excellent nickname of "Bobs." His only son was killed in the South African War. Though small of stature, Lord Roberts was every inch a soldier in bearing and in appearance. He will for long stand as the type of faithful, devoted, and able British soldier. Gifted with great abilities as an organizer, his conceptions of military situations were sound, his plans accurate, his execution thorough and successful. England probably regrets today the persistent neglect with which she received his pleas and appeals for a proper constitution of her military resources.

ROBESON, HENRY BELLOWS. A rear admiral (retired) of the United States navy, died July 16, 1914. He was born in New Haven, Conn., in 1842, and graduated from the United States Naval Academy in 1860, being appointed midshipman in the same year. He took part in numerous engagements during the Civil War and was made lieutenant in 1866; commander in 1874; captain in 1886; commodore in 1898; and rear admiral in 1899. He was commandant at the New York Navy Yard from 1874 to 1876, and again from 1883 to 1888. In 1891–92 he was supervisor of New York Harbor. He was at the Naval War College in 1895, and from that year until 1898 was captain at the Navy Yard at Portsmouth. In 1899 he was retired from active service.

ROCKEFELLER FOUNDATION. See INDUSTRIAL RELATIONS COMMISSION; LABOR; and section so entitled under PENSIONS FOR MOTHERS and RELIEF FOR WAR VICTIMS.

ROCKEFELLER INVESTIGATION. See LABOR, section entitled as above.

ROCKHILL, WILLIAM WOODVILLE. American diplomat, died Dec. 8, 1914. He was born in Philadelphia, in 1854, and was educated at the military school at St. Cyr in Paris. For the three years following graduation he was an officer of the French Foreign Legion. From his earliest years he had been attracted by China and her institutions, and when in 1884 he was appointed second secretary to the American Legation in Pekin he began an enthusiastic study of conditions in China, which continued throughout his life. He remained in Pekin until 1888, except a few months during which he acted as chargé d'affaires at Seoul, Corea, and for the next four years carried on investigations for the Smithsonian Institution in Mongolia and Tibet. In 1893 he was appointed chief clerk of the State Department and in the following year became Third Assistant Secretary of State. In 1897 he was appointed Minister to Greece, Rumania, and Servia, retaining these positions until 1899 when he was appointed director of the International Bureau of American Republics. In 1905 he was appointed Minister to China and held this post for four years, when he was appointed Special Commissioner of the United States to that country. This was a critical time in the history of the Chinese Empire, and the United States government wished to have its affairs in charge of a man who knew the country and had a sympathetic interest in the fortunes of its people. In the following year Mr. Rockhill represented the United States in the congress of Pekin and signed the protocol which was the settlement of the Boxer troubles. In 1908 Mr. Rockhill, having already written a standard life of Buddha from Tibetan sources, visited the Dalai Lama, the head of the Buddhist religion in Tibet. In 1909 Mr. Rockhill was appointed American Ambassador to Russia, and after two years of service in that country became Ambassador to Turkey, in which post he

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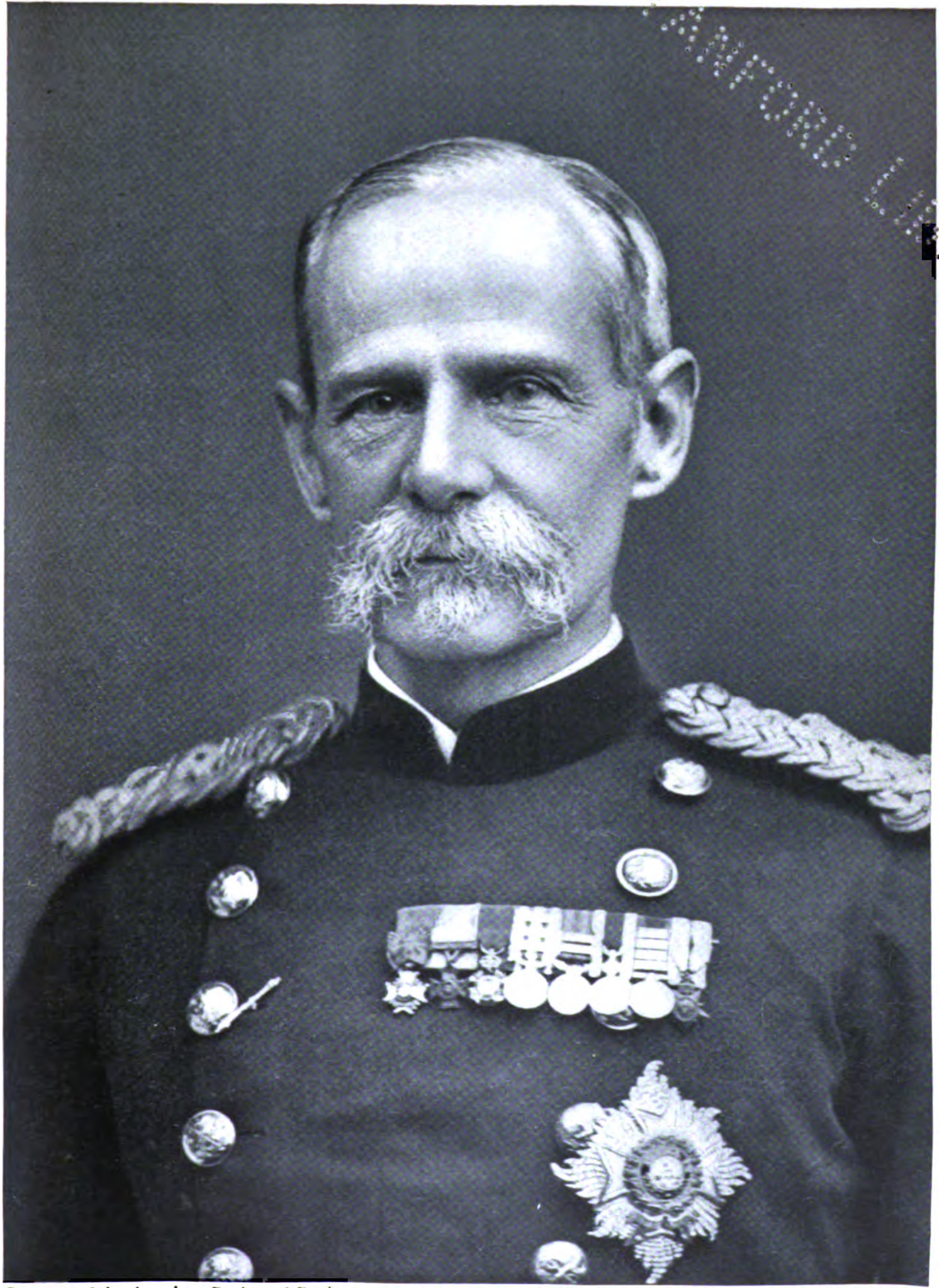


Courtesy of the American Review of Reviews

FIELD MARSHAL EARL ROBERTS
DIED NOVEMBER 14, 1914

remained until he was succeeded in 1913 by Henry Morgenthau. Early in 1914 he was invited by President Yuan Shih-kai to become his general adviser. This position he accepted, returned to the United States to settle his affairs, and was on his return to China when he died at Honolulu. He was the author of various works on Oriental subjects and was a correspondent of the Institute of France.

ROCK ISLAND COMPANY. See RAILWAYS.

ROENTGENOLOGY. See RADIOTHERAPY AND ROENTGENOLOGY.

ROENTGEN RAYS. See PHYSICS.

ROJAS, PEDRO EZEQUIEL. A Venezuelan diplomat, Minister to the United States, died June 26, 1914. He was born at Cumana, Venezuela, in 1844, and from his majority was identified with the politics of his country. He began life as a newspaper writer, for a time was in exile, and served as a Representative in Congress, a national Senator, and president of the National Congress. He was Minister of Foreign Affairs from 1893 to 1898. It was while he was in this post that the boundary dispute between Great Britain and Venezuela was submitted to arbitration through the good offices of the United States. He was appointed Minister to the United States in 1909. Dr. Rojas was one of the leading public men of Venezuela, a noted jurist and authority on international law, and wrote much on political and literary subjects.

ROMAN CATHOLIC CHURCH. The year 1914 will go down in history as one of the most important in many decades for the government, influence, and progress of the Church. The death of Pope Pius X (q.v.), and the election of his successor, Benedict XV (q.v.), on September 3 were the most notable of the incidents of the year. At the conclave for the election of the new Pope, which assembled August 31, 57 cardinals were present, 30 Italians, and 27 other nationalities. The American cardinals, Gibbons and O'Connell, did not arrive in time, but Cardinal Farley, who was in Switzerland when the Pope died, had the distinction of being the first American prelate of note to vote for the election of a Pope. One result of the European War has been the general recognition of the prestige and authority of the Pope on the part of Old World rulers. All the belligerent powers, except France, are now represented at the Vatican, England sending a special envoy, Sir Henry Howard. Even Italy granted an *exequatur* to the Archbishop of Genoa, which had been refused since 1912. With the close of the year the College of Cardinals consisted of 63 members, 31 Italians, and 32 of other nationalities. During the year eight cardinals died: Gennari, Katschthaler, Von Kopp, Lugarri, Ferrata, Cavallari, Dubilliard, and Di Pietro. One of the first acts of Pope Benedict was to appoint, on September 4, Cardinal Ferrata as his Secretary of State, but the cardinal died on October 10. The Pope immediately named Cardinal Pietro Gasparri, who had been his former companion in the State Department under Cardinal Rampolla, to fill the vacancy. Pope Benedict held his first consistory on September 8, at which he gave the red hat to four cardinals, who were absent from the previous consistory, and delivered an allocution urging peace in Europe, and lamenting the evils and disorders of the day. He referred to the great work done by Pope Pius X in reforming Church music, in condemning Modernism, and in promoting piety among the faithful. Concord of action and obedience to bishops were strongly insisted on, and holiness of life should be promoted in the clergy, whom he wants to be united with and obedient to their bishops. While praying for peace he wished for the entire freedom of the Church to protect the rights and dignity of the Apostolic See.

On May 25, Pope Pius X held his last consistory, at which he created 13 cardinals: 5 Italians, 2 Germans, 2 Austro-Hungarians, and 1 each for Canada, France, Spain, and England. These cardinals were: Louis N. Bégin, Archbishop of Quebec; Vittoriano Guisasola y Menendez, Archbishop of Toledo, Spain; Giacomo Della Chiesa, Archbishop of Bologna; F. G. Piffl, Archbishop of Vienna; Domenico Serafini, Archbishop of Seleucia and Assessor of the Holy Office; Filippo Giustini, Secretary of the Congregation of Sacraments; Michele Lega, Dean of the Rota Tribunal; Scipione Tecci, Secretary of the Consistorial Congregation; Abbot Aidan Gasquet, President of the English Benedictines; Francis von Bettinger, Archbishop of Munich; Felix von Hartmann, Archbishop of Cologne; John Czernoch, Archbishop of Strigonia. In April the Pope issued an important *motu proprio* establishing a college in Rome for the training of priests charged with the care of Italians emigrating to foreign lands; in July, another on the teaching of theology and philosophy; and on July 23 concluded a concordat with Servia by which the free exercise of the Catholic religion in that kingdom was recognized. On April 25 the Apostolic Delegation of Australia was established. Mgr. Bonaventure Cerretti, who had been auditor of the delegation at Washington, D. C., was appointed the first delegate, and consecrated titular Archbishop of Corinth, July 12. On August 4 the Jesuits commemorated the centenary of the restoration of the Society of Jesus, and the Pope marked the event by a letter of eulogy and congratulation to the Father General.

STATISTICS. The total Catholic population of the world was estimated by the Church officials at 301,172,712; in 1913 it was 298,734,824. The *Official Catholic Directory* for 1914 gives 16,067,985 as the number of Catholics in the United States. The hierarchy is made up of 3 cardinals, 14 archbishops, and 99 bishops. There are 18,568 priests, an increase of 623 for the year, of whom 4864 belong to the religious orders. The churches number 14,651, and of these 9740 have resident pastors. The educational totals show 82 seminaries; 7062 seminarians; 230 colleges for boys; 680 academies for girls; and 5403 parochial schools, with 1,429,859 children. The States having the largest number of Catholics are: New York, 2,884,723; Pennsylvania, 1,684,220; Illinois, 1,461,634; Massachusetts, 1,395,892; Ohio, 781,179; Louisiana, 585,000; Michigan, 582,500; Wisconsin, 578,195; New Jersey, 565,000; Missouri, 470,000; Minnesota, 461,950; Connecticut, 438,483; California, 410,000; Texas, 313,000; Iowa, 277,095; Rhode Island, 270,000; Maryland, 261,000; Indiana, 239,238; Kentucky, 166,070; New Mexico, 140,573; Kansas, 130,700; New Hampshire, 130,081; Maine, 124,400; Nebraska, 115,959; Colorado, 109,182. Including the insular possessions, there are 24,224,609 Catholics under the Stars and Stripes.

The Hierarchy. The changes during the year in the hierarchy of the United States included the addition of two titular bishops, Mgr. P. J. Hayes, appointed auxiliary of New York, and Mgr. T. J. Shahan, rector of the Catholic University, named titular of Germanicopolis. Archbishop Seton, long resident in Rome, returned and located permanently at Emmitsburg, Md. Bishops James Trobec of St. Claud and Joseph J. Fox of Green Bay resigned, the former being succeeded by Bishop J. F. Busch, transferred from Lead, S. Dak. The Rev. Henry Althoff was consecrated Bishop of Belleville, Ill., Feb. 24; and the Rev. Michael J. Curley was appointed Bishop of St. Augustine, April 5. Bishop A. F. Schinner, formerly of Superior, Mich., was installed as Bishop of Spokane, Wash., June 18. Archbishop P. J. Riordan of San Francisco died April 27, and the auxiliary Bishop Hanna took charge as administrator. Bishop Foley of Detroit asked for a coadjutor because of age. A new diocese, the fifth, was erected in Texas with the see city at El Paso; it comprises 20 counties taken from the diocese of Dallas, San Antonio, and Tucson. The Very Rev. John J. Brown, S.J., president of the College of the Sacred Heart, Denver, was appointed its first bishop. The United States now has 101 sees, the largest number of any nation after Italy.

Assemblages. The 25th International Eucharistic Congress was held at Lourdes, July 22–26, and was attended by 10 cardinals, more than 200 bishops, and a multitude of priests and laymen from all over the world. Cardinal Gennaro presided, representing the Pope, and the American delegation was headed by Cardinal Farley. The annual National Catholic Congress of England was held at Cardiff, July 10–13.

The Supreme Court of the United States decided July 1, that the vow of poverty taken by members of religious orders was legal, and not void, as against public policy. The War Department refused to allow a Catholic chapel to be erected on Governors Island, N. Y., military reservation, Judge Advocate General Crowder holding that the law authorizing the Y. M. C. A. buildings there, and on other reservations, did not grant authority for the erection of denominational places of worship. See France, *History.*

ROTCH, Thomas Morgan. An American physician and educator, died March 9, 1914. He was born in Philadelphia in 1849, graduated from Harvard College in 1870, studied medicine, and after admission to practice, became medical house professor in the Massachusetts General Hospital in 1873. After remaining there for one year he studied in European hospitals until 1876. From 1878 to 1888 he was assistant professor of diseases of children at the Harvard Medical School, becoming full professor in 1893, and professor of pediatrics in 1903, which chair he held until his death. He was a visiting physician in several hospitals in Boston, was consulting physician of St. Francis' Hospital for Infants in London, and was a member of many scientific and medical societies. He wrote *The Roentgen Ray in Pediatrics*, and contributed to medical journals.

ROWING. The rowing season of 1914 was marked by the triumph of the Harvard junior varsity eight in the historic Henley Regatta on the Thames, England, after a bitter struggle with the Union Boat Club of Boston, a crew made up of former Harvard oarsmen. It was the first time an American crew had ever captured the Grand Challenge Cup. Also of interest is the fact that Great Britain for the first time was not represented in the final heat. The two American crews battled their way through the semi-finals and then struggled gloriously for individual supremacy. The same good fortune, however, did not attend the American scullers in the regatta. They were all eliminated in the semifinals. Robert Dibble of Canada lost in the final to Giuseppe Sinigilia of Italy.

College rowing in the United States furnished two surprises. Columbia won the varsity race at the intercollegiate regatta held on the Hudson River, near Poughkeepsie, while Yale at last broke Harvard's long winning streak in the annual races on the Thames, near New London, Conn. At the Poughkeepsie regatta, Pennsylvania finished second in the varsity eight-oared event, Cornell third, and Syracuse, the 1913 winner, fourth. Cornell was victorious in the junior varsity and the freshmen races.

The Columbia varsity eight consisted of H. Naumer, bow; A. C. Rothwell, 2; E. I. Williams, 3; V. Sanborn, 4; Studdiford Pitt, 5; Norman Bratton, 6; I. W. Hasdell, captain, 7; and C. F. McCarthy, stroke. The crew's time for the four miles was 19:37⅘. The record for the event, 18:53⅕, was made by Cornell in 1901. The times made by the varsity crews were: Pennsylvania, 19:41; Cornell, 19:44⅕; Syracuse, 19:59⅖; Washington, 20:01⅗; Wisconsin, 20:20. In the freshmen race the time of Cornell, the winner, was 10:07⅘; Syracuse, 10:50⅕; Pennsylvania, 10:50⅖; Columbia, 10:56⅕; Wisconsin, 10:59. The winning freshmen eight comprised: D. S. Morgan, bow; G. D. Stahl, 2; H. A. Meyers, 3; L. W. Overlock, 4; J. A. Worn, 5; A. A. Cushing, 6; G. E. Lund, 7; J. L. Collyer, stroke.

The Yale varsity crew, which triumphed over Harvard on the Thames, included: Low, bow; Meyers, 2; Titus, 3; Sheldon, 4; Sturtevant, 5; Rogers, 6; McHenry, 7; Appleton, stroke. Yale's time was 21:16, and Harvard's 21:16⅕. Harvard won both the second varsity eight, and the freshmen race, the times being 11:34 and 11:49, respectively. Yale's times for these events were 12:02 and 12:04. The winning Harvard second varsity crew comprised Saltonall, bow; Talcott, 2; Meyer, 3; J. Middendorf, 4; H. Middendorf, 5; Morgan, 6; Curtis, 7; Lund, stroke. The winning freshmen were: Potter, bow; Culbert, 2; Richardson, 3; Young, 4; Ely, 5; Stebbins, 6; Cabot, 7; Brown, stroke.

In the Pacific Coast intercollegiate varsity race over the 3-mile course at Oakland, Cal., Washington for the second consecutive year finished first. Leland Stanford was second, and California third. Washington's time was 18:58. Leland Stanford won the freshmen event with California second. Dual college regattas in 1914 resulted as follows: Cornell varsity eight defeated Harvard; U. S. Naval Academy defeated Harvard; Pennsylvania defeated the U. S. Naval Academy. Cornell won the triangular race with Yale and Princeton, and Columbia in another triangular affair defeated Princeton and Pennsylvania.

The United States and Canada divided the honors at the 42d annual championships of the National Association of Amateur Oarsmen held on the Schuylkill River, near Philadelphia.

Photograph by Paul Thompson, N. Y.

POPE PIUS X
DIED AUGUST 20, 1914

Photograph by Paul Thompson, N. Y.

POPE BENEDICT XV
SUCCEEDED TO THE PAPACY 1914

Ed Butler of the Argonaut Rowing Club of Toronto won the quarter-mile dash, while Robert Dibble of the Don Rowing Club of Toronto again captured highest honors in the single sculls. The Duluth Boat Club won the international and senior eight-oared races, and the international four-oared event. The Grand Rapids Club was victor in the junior eights, and the University Barge Club of Philadelphia took the laurels in the senior four oars.

The twelfth annual regatta of the National Rowing Association, popularly known as the American Henley, also was held on the Schuylkill. The winners of the principal events were: First eight-oared shells, Harvard; special four-oared shells, University of Pennsylvania; freshmen eight-oared shells, University of Pennsylvania; junior collegiate eight-oared shells, Harvard. John B. Kelly of the Vesper Boat Club of Philadelphia won the first single sculls in 8:03, breaking the record of 8:05 made by J. Williamson in 1905.

The Oxford-Cambridge race was won by Cambridge for the first time since 1908.

RUBBER. In connection with the European War an important and serious situation in the rubber industry, especially in the United States, was provoked by the British decision to hold crude rubber as contraband of war, as in this way some 50 per cent of the normal supply required for the United States was cut off. This decision was reached in the early days of October, and at the same time an embargo on shipments of rubber from the British colonies, which include Ceylon and the Federated Malay States, to any but British ports was made; and as a result all direct shipment from Singapore and Colombo to New York was stopped, although at first rubber came by the way of London. On November 13 the embargo was extended to all shipments of crude rubber from all English ports to any countries except those of Great Britain's allies, and as a result no plantation rubber was shipped to the United States. The reason for this was to prevent Germany and her allies from obtaining any of the crude rubber grown in the British possessions, as it was important in warfare for the use of automobiles, and for making rubber footwear, rubber blankets, clothing, and balloon fabrics. The result of this embargo was to increase the price of rubber from 35 to 45 cents a pound, or 50 per cent in the crude product, and the estimated cost to the American rubber industry was stated at $250,000 a day. The American industry naturally is dependent on the crude rubber imported and once the greater part of the supply came from Brazil, but latterly 60 per cent of the crude rubber used in the American factories was derived from the British Empire, as the Brazilian rubbers were considered more expensive, and the African and Mexican rubbers were of inferior quality. Of the 60,000 tons of rubber annually consumed in the United States, 35,000 tons are plantation rubber, which normally sells at about 45 to 55 cents a pound, but by the end of 1914 the price was raised to about 90 cents a pound by the effect of the embargo. This led to the slowing up of mills, and the laying off of a number of the 125,000 people directly or indirectly employed in the American rubber industry, and the trade was naturally seriously agitated. It was hoped that some arrangement could be secured by which the embargo could be removed or its effects mitigated, and a representative of the American rubber industry was sent to Great Britain, while the United States Department of State took up the question through diplomatic channels. The industry was seriously disturbed and was unable to exploit the South American field, as it was feared that at any time the embargo might be reduced, and the markets be flooded with the British product, which naturally would involve loss on the part of those who had contracted for South American supplies at higher prices.

It was stated that Germany, in taking possession of Antwerp, took possession of a large amount, somewhat in excess of 100 tons, and that the peak price was paid for it. In Great Britain makers of waterproof cloth, type makers, and surgical goods makers were very busy after the outbreak of the war, but there was a corresponding decline in other fields, especially those ministering to sports and pastimes, and the general engineering and the building trades.

The world's production of rubber during 1914 was estimated at about 115,500 tons, and for the first time plantation grades were in preponderance as the supply from Ceylon and Malaya was estimated at about 65,000 tons, while from Amazonas and Brazil 37,000 tons were shipped, from West Africa 8500 tons, and from various other sources 4500 tons. The shipments from Brazil were slightly under the average, being estimated at 37,000 tons for 1914, as compared with 39,000 tons in 1913, 40,500 tons in 1912, 39,500 tons in 1911, and 40,500 tons in 1910. The Brazil rubbers seemed to be more highly appreciated in the markets of the world, but the extensive imports of plantation rubbers seemed to indicate that the Far East was destined to play a still more important part in the production of this product. This estimate of the rubber crop of the world, which was prepared in London, takes into consideration the distribution of the available supply about as follows:

	Tons
England	24,000
Germany, Austria, etc.	13,000
France	8,000
Russia	14,000
Italy, etc.	2,500
Japan and Australia	3,000
United States and Canada	51,000
Total	115,500

The sources of supply are given in the following table, and a more detailed table from an authoritative American summary is also included.

The sources of estimated supply for 1914:

	Tons
Plantation	65,500
Amazonas and Brazil	37,000
West African	8,500
Mattogrosso, Manicoba, Assare, etc.	1,800
East African, Manihot, etc., Penang, Borneo, Rangoon, Assam, Madagascar, etc.	1,500
Central American, Mexican, etc.	1,200
Total	115,500

To this must be added considerable quantities of reclaimed rubber, but less than in 1913.

No account is taken in this computation of stocks in hand for the reason that, on account of war conditions at the end of the year, it was impossible to ascertain how much of the rubber stored in the various foreign ports was already

CONSUMPTION OF INDIA RUBBER BY UNITED STATES AND CANADA (IN TONS)
[From the Annual Statistical Summary of Meyer & Brown, New York.]

Details—	*1910*	*1911*	*1912*	*1913*	*1914*
Imports to United States	32,916	35,088	50,051	48,724	59,876
Exports to Liverpool and Continent	1,340	828	430	298	955
	31,576	34,265	49,621	48,426	58,921
Add stock on January 1	1,332	522	636	605	395
	32,908	34,788	50,257	49,031	59,316
Less stock close of year	523	636	605	395	141
Deliveries to manufacturers (rubber)	32,385	34,152	49,652	48,636	59,175
Deliveries to manufacturers (guayule)	10,656	8,091	6,105	2,756	850
Total rubber and guayule	43,041	42,243	55,757	51,392	60,025

sold, and was being held awaiting opportunity for shipment.

The rubber acreage in British Malaya continued to increase, and the official statistics of the planted surface from Jan. 1, 1913, to Jan. 1, 1914, were as follows:

	Acres	
	1913	*1914*
Federated Malay States	399,197	433,224
Straits Settlements	94,268	111,816
Johore	91,827	117,022
Kelantan and Kedah	34,837	45,878
Trengganu	1,497	1,510
	621,621	708,545

In Sumatra the acreage under *hevea* increased from 400 acres in 1902, to 197,530 acres by the end of 1912, in addition to plantations of *ficus elastica*. The nominal capital in Sumatra rubber plantations at this time was estimated at $53,000,000, of which one-half was British. See CHEMISTRY, INDUSTRIAL.

RUGSKY, GENERAL. See WAR OF THE NATIONS.

RUM. See LIQUORS.

RUMANIA. A constitutional European monarchy, bordering on the Black Sea, and composed of the former principalities of Moldavia and Wallachia, with the territory of Dobruja. Bucharest in the capital.

AREA AND POPULATION. In the table below are given the area and population of the 32 districts which compose the kingdom, according to the census of Jan. 1, 1913 (Dec. 19, 1912), as compared with the returns for 1899; together with the density in 1913.

	Sq. km.	*1899*	*1913*	*D.*
Argesh	4,435	207,605	242,946	55
Bacau	3,978	195,194	232,146	60
Botoshani	3,148	171,437	197,118	63
Braila	4,358	145,284	181,088	42
Buzau	4,868	221,268	277,598	57
Constantsa	6,910	141,056	217,740	32
Covurlui	2,961	143,784	171,710	75
Dambovitsa	3,456	211,666	258,367	67
Dolj	6,565	365,579	437,617	65
Dorohoi	2,822	159,461	184,357	49
Falciu	2,208	98,831	108,824	48
Gorj	4,698	171,300	200,859	36
Ialomitsa	6,789	187,889	242,611	68
Iashi	3,121	192,531	213,196	117
Ilfov	5,780	541,180	678,769	82
Mehedintsi	4,949	249,688	295,548	59
Muscel	2,954	115,180	135,616	46
Neamtsu	3,998	149,711	169,794	42
Olt	2,825	143,848	171,262	61
Prahova	4,664	307,802	181,108	56
Putna	3,249	151,249	389,785	84
Ramicu-Sarat	3,268	136,918	164,166	50
Roman	2,091	111,588	128,190	61
Romanatsi	4,577	203,778	248,401	54
Suceava	3,421	131,596	158,971	46
Tecuci	2,547	121,179	142,993	56
Teleorman	4,685	238,628	296,759	61
Tulcea	8,626	126,752	172,566	20
Tutova	2,391	116,877	129,858	54
Vaslui	2,294	110,184	127,704	56
Valcea	4,289	190,908	231,572	55
Vlashca	4,488	202,759	259,482	58
Total	131,353	5,956,690	7,248,060	—
New territory *	8,340	....	353,600	40
Total	139,693	5,956,690	7,601,660	

* Territory ceded to Rumania by Bulgaria by the treaty of Bucharest, Aug. 7, 1913.

The population was divided according to nationality (1899) into 5,489,296 Rumanians, 182,875 foreign subjects, 256,588 Rumanian, and 5859 foreign, Jews, etc. Descendants of the Magyars people central Moldavia. Bulgarians and Servians are numerous along the Danube. Hordes of gypsies are scattered over the country, and in the Doubruja are found Turks, Tatars, Bulgars, Russians, and Germans. Marriages in 1911 numbered 62,400, births 314,090, deaths 165,616, stillbirths 9082. In 1913 Bucharest had 338,109 inhabitants, Iashi (Jassy) 75,882, Galatz 71,719, Braila 64,750, Poleshti 56,594, Craiova 51,973, Botoshani 32,813, Buzau 28,781, Constantsa 26,608.

EDUCATION, ETC. Primary instruction is free and nominally compulsory, but inadequate provision is made. Nearly 60 per cent of the population over 7 years of age remain illiterate. In 1909, 43.12 per cent of the army recruits could neither read nor write, and in 1910, 41 per cent.

The treaty of Berlin provides for religious tolerance and equality, but the Jews have been harshly treated. The Greek Orthodox is the national religion, and only the clergy of this Church are recognized and paid by the State. Of the total population in 1900, 5,408,743 were Orthodox, 266,015 were Jews, 168,176 Catholic or Protestant Christians, 43,470 Mohammedans, and 16,598 Armenians.

PRODUCTION. The soil is very fertile, and were it not for severe droughts would be among the most productive in Europe. A large majority of the population is engaged in agricultural pursuits, over 40 per cent of the agricultural land being in small holdings of 25 acres or less possessed by peasant proprietors. The total area returned as productive in 1913 was given at 6,003,520 hectares, of which 71.73 per cent were small enterprises of less than 100 hectares, and 28.27 per cent enterprises of 100 hectares or over. Devoted to cereals were 5,001,041 hectares, or 83.30 per cent; textile fibres, 118,715 hectares; legumes, 78,345 hectares; industrial plants (beets, tobacco, etc.), 24,757 hectares; market gardens, 23,691 hectares; forage plants, 599,010 hectares; vines and plum orchards, 166,961. The country amply feeds itself and is able to export grain, fruits, and vegetables in large quantities. In the table below are shown area devoted to principal crops, production in quintals, and quintals per hectare yielded in 1912–13.

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*ha.*
Wheat	1,628,105	2,111,416	22,918,340	12,665,000	14.1
Rye	90,583	84,067	948,025	573,000	10.5
Barley	562,589	568,219	6,020,000	5,108,000	10.7
Oats	522,149	427,497	5,320,000	3,402,000	10.2
Corn	2,146,971	2,065,285	31,113,288	28,000,000	14.5
Flax	27,299	8,357	134,447	38,000	4.9
Beets *	13,014	14,785	2,823,646	....	217.0
Vines †	90,026	87,988	1,518,883	....	16.9
Tobacco	10,976	10,955	94,989	....	8.7

* Sugar beets.
† Production in hectoliters.

The production of wine in 1912 and 1913 (1,518,883 hectoliters) represents a value of about 55,200,000 lei. In 1912–13 the plum orchards yielded 1,844,394 quintals of fruit, valued at over 21,000,000 lei. Yield of legumes, 1912–13, 2,407,949 hectoliters; of forage plants, 13,767,915 metric quintals.

Forest products form a valuable asset. Cattle and sheep raising is an important industry, though stock raising has declined since the closing of the Austro-Hungarian frontier to the export of live animals. There were in the country (1911) 824,714 horses, 2,666,945 cattle, 5,269,493 sheep, 186,515 goats, 1,021,465 swine, 4248 mules and asses.

The fishing industry has shown notable development, so that in place of the large importation common in former years there is now an annual export valued at nearly 3,000,000 lei. Minerals and precious metals are said to abound, but only salt, coal, and petroleum are worked. Salt is a government monopoly. The output of petroleum in 1913 reached 1,885,225 metric tons—1,677,759 tons from Prahova, 125,722 from Buzau, 41,583 from Dambovitsa, 40,161 from Bacau.

COMMERCE. The total imports and exports for the year 1911 were valued at 616,504,872 and 691,720,408 lei, respectively. Details of the 1911 trade are given in the table below, values in thousands of lei:

Imports	*1000 lei*	*Exports*	*1000 lei*
Metals & mfrs.	122,555	Cereals, etc.	557,653
Textiles	91,558	Petroleum, etc.	40,742
Machinery	59,156	Legumes, etc.	35,217
Woolens	51,180	Timber, etc.	25,761
Vehicles	37,975	Animal products	7,835
Apparel	28,309	Live animals	6,454
Skins, etc.	23,028	Metals, etc.	3,725
Silks	20,597	Wool	2,548
Wooden wares	14,271	Hides, etc.	1,856

Germany contributed imports valued at 183,713 thousand francs, and received exports valued at 33,008 thousand francs; Austria-Hungary, 136,906 and 62,874; United Kingdom, 85,470 and 55,980; France, 35,273 and 48,879; Italy, 28,554 and 49,592; Belgium, 28,109 and 263,468; Turkey, 13,476 and 21,030; Russia, 13,526 and 6971; Switzerland, 10,802 and 193; Netherlands, 4803 and 76,907; Gibraltar, 36,775 exports; etc. Vessels entered in the 1912 trade numbered 36,968, of 10,805,605 tons; cleared, 36,729, of 10,740,173. The merchant marine included Jan. 1, 1913, 117 steamers, of 30,762 tons, and 532 sail, of 167,397 tons.

FINANCE AND COMMUNICATIONS. The leu, worth 19.295 cents, is the unit of value. In the table below are shown in lei revenue and expenditure for 1909–10, and for 1911–12, with estimates for 1912–13.

	1909-10	*1911-12*	*1912-13*
Revenue	522,842,688	478,395,280	587,983,251
Expend.	481,921,854	478,395,230	487,576,942

In the table below are details of the budget for 1913–14, amounts in thousands of lei:

Revenue	*1000 lei*	*Expend.*	*1000 lei*
Direct taxes	46,330	War	81,893
Indirect taxes	87,600	Finance	219,085
Stamps	34,000	Instruction	51,075
Monopolies	78,810	Interior	49,145
Public services	148,115	Public works	101,563
Domains	32,501	Justice	11,400
Subventions	22,518	Agriculture	10,157
Finance	73,713	Industry	4,868
Interior	3,872	Foreign affairs	3,187
Justice	2,219	Council	65
Foreign affairs	120	Extraordinary	3,864
Agriculture	98		
Industry	1,496		
War	550		
Public works	37		
Instruction	6,327		
Total	536,307	Total	536,307

The capital of the debt stood April 1, 1913, at 1,640,895,699 lei.

There were in operation Sept. 1, 1913, 3763 kilometers of railway, of which the State owned 3549 kilometers. State telegraph lines, 7706 kilometers, with 21,661 kilometers of wires, and 3125 stations.

NAVY. The effective fleet was composed in 1913 of 1 protected cruiser (1320 tons), 1 dispatch boat (130), 5 gunboats (607), 1 training ship (350), 1 torpedo depot (104), 3 gunboats (135) 4 torpedo gunboats (128), 3 torpedo boats (150), 4 police boats (2720), 8 torpedo vedettes (360).

ARMY. Rumania, like other European countries, requires compulsory service with liability from 21 to 42 years of age, though previous to this the recruits have a preliminary training from the age of 19 to that of 21. The peace strength of the army was estimated at slightly over 100,000, while the war strength was probably 500,000. The Rumanian army, on account of the political situation and the war, was under arms during 1914. Previous to the outbreak of the war the five army corps of which the army was composed were distributed as follows: First army corps at Crajova; second army corps at Bucharest; third army corps at Galatz; fourth army corps at Jaffy; fifth army corps at Constantza.

GOVERNMENT. The executive power is vested in a king, assisted by a council of eight members. The legislative body is composed of a senate of 120 members, and a chamber of 183 deputies, elected by a system of direct and indirect popular vote based on property qualifications. The reigning sovereign in 1914 was Charles I (see biography of him, under his name), born April 20, 1839 (n.s.), elected to the princeship in 1866, crowned King May 10, 1881. Nov. 15, 1869, he married Princess Elizabeth von Wied. He died Oct. 10, 1914, and was succeeded by Prince Ferdinand, born Aug. 24, 1865, the second son of his elder brother.

HISTORY. On Jan. 7, 1914, M. T. Majoresco announced that his cabinet, having safely conducted the country through the Balkan War, was now ready to resign. The Majoresco cabinet had been formed in October, 1912, on the basis of a coalition between the Old Conservatives (T. Majoresco) and the Conservative-Democrats (Take Jonesco), but the coalition was not firmly cemented, and in January, 1914, gave place to the Liberals (Joan Bratiano). M. Joan Bratiano formed a Liberal cabinet as follows: President of the council and minister of war, Joan Bratiano; finance, M. Costinesco; foreign affairs, M. Porumbaru; interior, M. Mortzun; agriculture, M. Constantinesco; commerce, M. Radovici; justice, M. Antonesco; public works, M. Angelesco. Beginning May 31, elections were held for the Parliament. To the Chamber were elected 143 Liberals, 2 Dissentient Liberals, 21 Conservatives, 18 Conservative-Democrats, 2 Nationalists, and 2 Independents; to the Senate were elected 80 Liberals, 2 Dissentient Liberals, 22 Conservatives, and 13 Conservative-Democrats. It will be seen that the Liberals controlled a clear majority in both houses. In June the Czar of Russia paid a brief visit to King Charles. The meeting of the two monarchs on Rumanian soil at Constantza was regarded as an international event of great importance, emphasizing Rumania's predominant position among the small nations of the Near East, and signalizing the desire of the Russian government to win the affections of Rumania. The widespread expectation, that at this time would be announced the engagement of Prince Charles of Rumania to the grand duchess Tatiana of Russia, was disappointed. But even without that seal of the Russo-Rumanian *rapprochement*, Austria-Hungary was severely displeased by the Constantza meeting; for within the dual monarchy there was much anxiety lest Rumania, forsaking her old friendship with the Triple Alliance, should become a satellite of the Triple Entente and conceive the ambition of "redeeming" the 3,000,000 Rumanians living under Hapsburg rule in the Provinces of Transylvania and Bukovina, and adjacent regions of Hungary. This anxiety, and a series of untoward incidents, tended to trouble the relations between Rumania and Austria-Hungary. In the summer of 1914 Rumania appeared to be exerting all her influence to maintain the treaty of Bucharest. The Rumanian capital was the rendezvous for Greek and Ottoman delegates, who came to arrange an agreement between Greece and Turkey. These negotiations were interrupted by the advent of the great European War in August, but the Rumanian government still declared its intention of defending the Bucharest treaty, and rumor pointed to efforts of Rumania in the direction of forming a neutral Balkan *bloc*. Within Rumania there was a considerable demand for immediate participation in the war against Austria-Hungary, a demand which was all the more insistently made since far-reaching military reforms and the formation of 40 new reserve battalions of infantry had but recently added to the strength of the excellent Rumanian army. That Rumania nevertheless remained neutral was ascribed in no small part to the influence of King Charles, who naturally favored the Germanic Powers, having himself been a German Hohenzollern prince before his election to the throne of newly united Rumania, almost half a century ago. The entry of Rumania into the war was confidently predicted, however, when the death of King Charles, on October 10, brought to the throne Crown Prince Ferdinand Victor Albert Meinrad (of Hohenzollern), who, having married an English princess, was presumed to be more favorable to the Triple Entente. At the opening of Parliament on November 28, King Ferdinand exhorted his people to be united in their patriotism, but he exhibited no intention of abandoning the policy of neutrality. The report that Rumania had ceded the Dobrudja back to Bulgaria, if reliable, would seem to indicate that either for the purpose of preserving peace in the Balkans, or for the purpose of securing Bulgarian neutrality, in case of Rumania's entering the war, it was desirable to purchase Bulgarian good-will. At the same time it was widely reported, though without official confirmation, that some kind of working agreement had recently been formed between the governments of Rumania and Italy relative to their respective relations to the War of the Nations.

RURAL CREDIT. See section so entitled under AGRICULTURE.

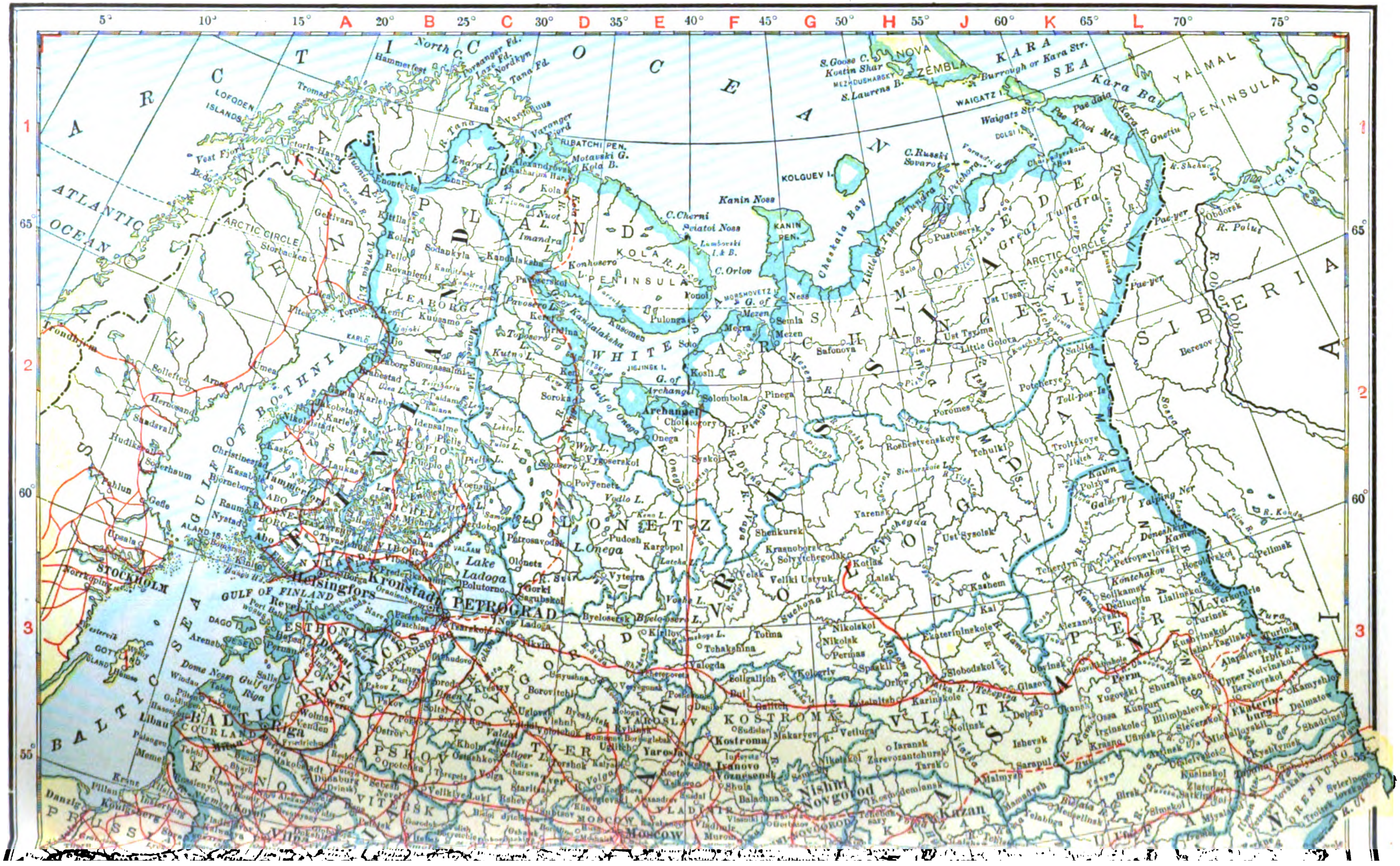
RUSSIA. A vast empire made up of a large part of eastern Europe and northern Asia; it extends from the Baltic to the Bering Sea, and from central Europe and Asia to the Arctic Ocean. Capital, Petrograd.

AREA AND POPULATION. The first Russian census was taken Jan. 28, 1897. The results of that census, and the population as calculated Jan. 1, 1911, together with the area, exclusive of the great internal waters, in square versts (1 square verst = .439408 square mile), are shown in the table below:

	Sq. versts	*1897*	*1911*
European Russia	4,288,711.7	94,215,400	120,528,000
Poland	111,554.2	9,455,900	12,467,800
Caucasus	412,810.8	9,248,700	12,087,200
Siberia	10,946,644.7	5,699,000	8,719,200
Central Asia .	3,110,628.7	5,724,700	10,107,800
Finland	286,041.8	2,555,500	3,115,197
Total	19,099,886.9 *	126,896,200	167,084,200

* 21,741,600 sq. kilometers; 8,394,018 sq. miles.

As calculated for 1858, the total population numbered 74,556,300; as calculated Jan. 1, 1912, the total for the empire was 171,059,900. Of the total in 1912, 122,550,700 (a density of 28.9 to the square verst) were in European Russia, 12,778,100 (114.5) in Poland, 12,288,100 (29.8) in the Caucasus, 9,577,900 (0.9) in Siberia, 10,727,000 (3.4) in central Asia, 3,140,100 (11.0) in Finland. The density of the empire as a whole was 8.9 in 1912. Of the total population, 85,726,300 were male, and 85,333,600 female. The population of the towns was 23,839,900 in 1912, or 13.9 per cent of the whole. In European Russia the town population was 13.2 per cent; in Poland, 23.3; in the Caucasus, 13; in Siberia, 11.6; in central Asia, 13.6; in Finland, 15.1; including Bokhara, Khiva, and the inland seas, the total area of the empire is


ARCTIC OCEAN
ATLANTIC OCEAN
KARA SEA
WHITE SEA
BALTIC SEA
GULF OF BOTHNIA
GULF OF FINLAND
NOVA ZEMBLA
YALMAL PENINSULA
KOLA PENINSULA
LAPLAND
FINLAND
SWEDEN
SIBERIA
ARCHANGEL
VOLOGDA
OLONETZ
PERM
VIATKA
KOSTROMA
YAROSLAV
TVER
PSKOV
NOVGOROD
ESTHONIA
LIVONIA
COURLAND
KOVNO
VITEBSK
PRUSSIA
KAZAN
UFA
ORENBURG
PETROGRAD
MOSCOW
Helsingfors
Kronstadt
Stockholm
Riga
Archangel
Kolguev I.
Kanin Pen.
Lake Ladoga
L. Onega
Gulf of Ob
Kara Bay
Cheskaia Bay
Arctic Circle
Ural Mts.
Great Tundra
R. Ob or Obi
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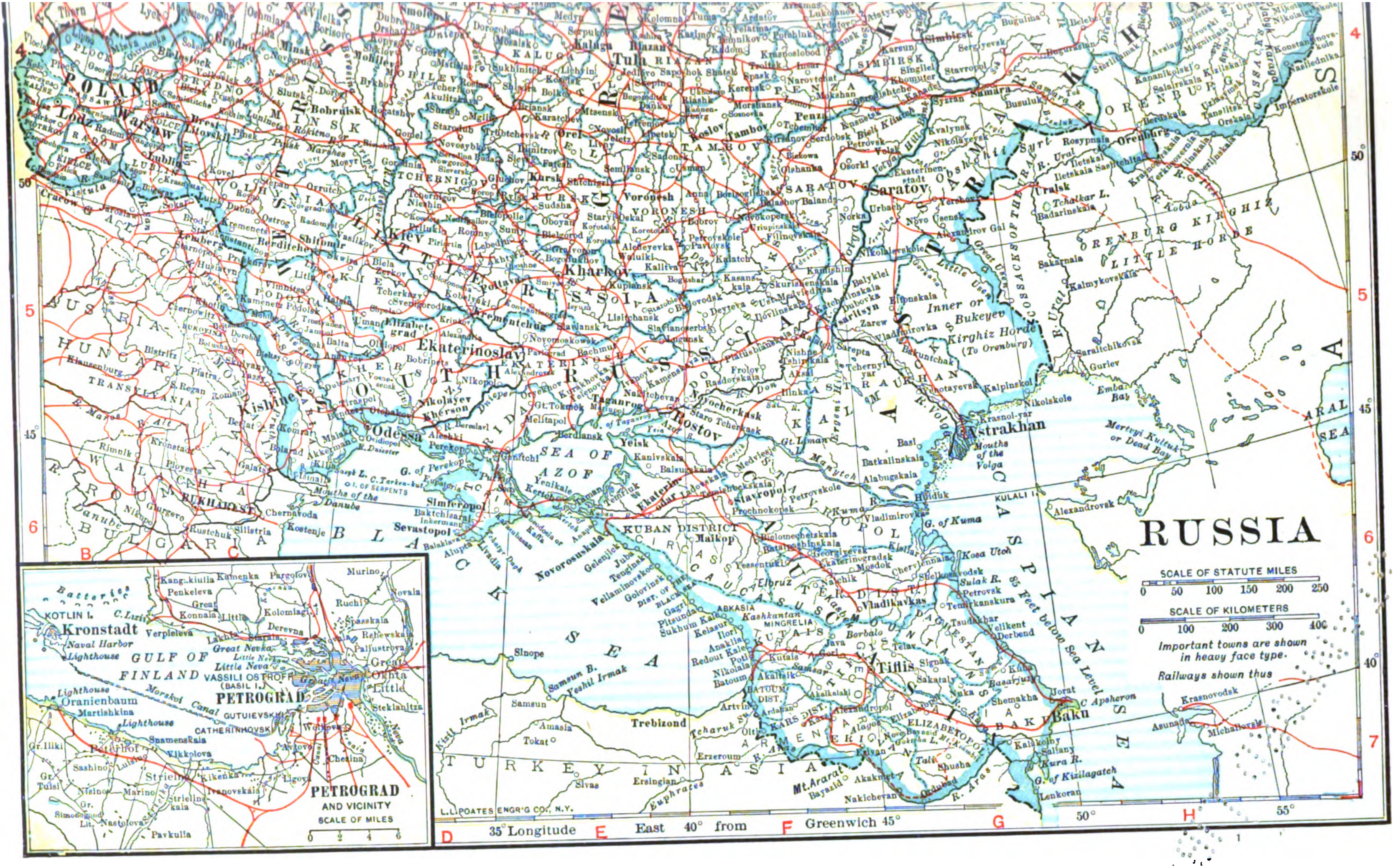
RUSSIA
SCALE OF STATUTE MILES
0 50 100 150 200 250
SCALE OF KILOMETERS
0 100 200 300 400
Important towns are shown in heavy face type.
Railways shown thus
PETROGRAD AND VICINITY
SCALE OF MILES
0 2 4 6
35° Longitude East 40° from Greenwich 45°
L.L.POATES ENGR'G CO., N.Y.
CASPIAN SEA
85 Feet below Sea Level
BLACK SEA
SEA OF AZOF
ARAL SEA
POLAND
LITTLE RUSSIA
SOUTH RUSSIA
TURKEY IN ASIA
CAUCASUS MOUNTAINS
KUBAN DISTRICT
AUSTRIA HUNGARY
ROUMANIA
BULGARIA
Warsaw
Kiev
Kharkov
Ekaterinoslav
Odessa
Rostov
Saratov
Astrakhan
Tiflis
Baku
Sevastopol
Kishinev
Kronstadt
GULF OF FINLAND
PETROGRAD

STANFORD LIBRARY

22,556,520 square kilometers, or 8,709,116 square miles; total population, Jan. 1, 1912, 173,359,900 (Bokhara 1,500,000, Khiva 800,000).

The Slav element predominates, totaling, in 1897, 92,100,000—Russians, 83,900,000 (66.3 per cent Great Russians, 26.6 Little Russians, and 7.0 White Russians); Poles, 7,900,000. In the table of races by percentages in the divisions of the empire, seen below, A = Russians, B = Turco-Tatars, C = Poles, D = Finns, E = Jews, F = Lithuanians, G = Teutons, H = Kartvelians, I = Caucasian mountaineers, J = Armenians, K = Mongols, L = others.

	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*	*L*
European Russia	80.0	4.9	1.2	3.6	4.0	3.0	1.4	...	...	0.1	0.2	1.6
Poland	6.7	0.1	71.8	0.1	13.5	3.3	4.3	...	...	...	...	0.2
Caucasus	34.0	20.2	0.3	0.1	0.4	0.1	0.6	14.5	11.7	12.0	0.2	5.9
Siberia	81.0	8.3	0.5	1.1	1.5	0.2	0.1	...	...	...	6.2	2.1
Central Asia	8.9	85.5	0.1	0.2	0.1	...	0.1	...	...	0.1	0.2	4.8
Finland	0.2	...	...	86.7	...	...	13.0	...	...	...	...	0.1
Empire	65.5	10.6	6.2	4.5	3.9	2.4	1.6	1.1	0.9	0.9	0.4	2.0

Of the total population, 69.90 per cent belong to the Orthodox creed, 10.83 are Mohammedans, 8.91 Roman Catholics, 4.85 Protestants, 0.96 other Christians, 0.50 other non-Christians. Those belonging to the Orthodox Church form 89.97 per cent of the total population of Siberia, 83.58 per cent of the total population of European Russia, 50.94 per cent of that of the Caucasus. Mohammedans form 90.29 per cent of the population of central Asia, 34.54 of that of the Caucasus. In Poland, 74.32 per cent of the population are Roman Catholics; in Finland, 98.0 Protestant. The Jews are found in Poland, forming 14.01 per cent of the population, and in European Russia 4.07. All Russians, Rumanians, the majority of the Kartvelians, and a few Turco-Tatars and Finns belong to the Orthodox Church; the majority of the Turco-Tatars and the Caucasian mountaineers are Mohammedans. There are calculated to each thousand of the population 771 peasants, 107 burgesses, 66 native non-Russians, 23 Cossacks, 15 nobles, 5 clergy, 5 professional, official, etc., persons, 8 of other classes. Engaged in agriculture are 74.6 per cent of the people; in the industries, including the making-up of raw materials, 9.6; commerce, 3.8; transport, 1.6; State service, 1.4; private employment, 4.6.

The latest figures available for the movement of the population in European Russia are for 1909, and return 917,287 marriages, 5,123,976 births, 3,374,915 deaths. The highest percentage of marriages is found among the Mohammedans, 10.9; Orthodox, 8.9; Jews, 7.4; Roman Catholics, 7.1; Protestants, 6.7. The average birth rate is 46.1 (Germany, 34.1; Austria, 36.0; Hungary, 37.2; Italy, 32.4; United Kingdom, 28.1; France, 19.7). The death rate is equally high, being 29.4 (Austria, 24.1; Hungary, 26.2; Italy, 21.8; Germany, 19.8; France, 19.6; United Kingdom, 16.0). Of the total number of infants born in 1908 (5,043,114), 32.7 per cent died under one year. The highest percentage of these deaths was in Perm government, 57.

The figures which follow regarding emigration from European Russia into Siberia are from information furnished by the Board of Emigration, and are far from complete. The total number of emigrants into Asiatic Russia from 1896 to the end of 1909 is returned at 3,616,993, of whom 2,920,626 were actual emigrants, and 696,367 were forerunners sent ahead to search out sites. Emigrants in 1910, 352,950 (of whom 316,163 emigrants and 36,787 forerunners); 1911, 226,062 (189,791 and 36,271); 1912, 259,585 (201,027 and 58,558). The number returned to European Russia in 1910 was 146,145; 1911, 142,952; 1912, 98,388. The growing confidence in friendly relations between Russia and Japan greatly favors the eastward movement. Emigration to the United States and other oversea destinations is impossible of accurate calculation, as many escape from Russia without passports. The number of Russian emigrants who landed in New York in 1910 was stated at 136,860. Total emigrants to the United States in 1910, 189,377; 1911, 160,970.

A few of the larger cities in European Russia follow, with their population as calculated in the year given in parenthesis: Petrograd (1913), 2,018,596; Moscow (1911), 1,533,400; Warsaw (1911), 864,000; Odessa (1911), 498,100; Kiev (1911), 446,800; Lodz (1911), 403,720; Riga (1912), 331,300; Kharkov (1911), 223,700; Saratov (1912), 206,300; Vilna (1911), 188,300; Kazan (1911), 182,540; Ekaterinoslav (1911), 151,200; Astrakhan (1912), 150,200; Revel (1914), 136,500; Tula (1912), 131,125; Rostov-on-Don (1911), 124,500; Kishinev (1912), 123,100; Minsk (1912), 112,600; Nizhni-Novgorod (1912), 108,800; Samara (1912), 104,400; Nikolaiev (1911), 97,500; Orenburg (1911), 93,600; Orel (1912), 93,200; Voronezh (1912), 92,400; Berdichev (1912), 88,600; Vitebsk (1911), 86,100; Libau (1911), 86,000; Kherson (1911), 85,300; Kursk (1912), 84,400; Kovno (1912), 84,100; Yaroslavl (1912), 82,800. In Asiatic Russia: Baku (1912), 226,400; Tiflis (1912), 194,900; Tashkent (1912), 194,600; Omsk (1912), 129,200; Kokand (1912), 117,200; Tomsk (1911), 108,800; Namangan (1912), 107,200; Ekaterinodar (1912), 100,600; Ussurisk (1912), 94,200; Vladivostok (1911), 93,200; Irkutsk (1912), 90,800.

Education, etc. The control and maintenance of primary schools is divided between the ministry of public instruction and the holy synod. Excepting in Finland, education facilities are totally inadequate, and in the rural districts many of the reported schools exist on paper only. The teachers are without proper qualifications, and a large part of the appropriation intended for educational purposes is entrusted to the holy synod for disbursement. Such provision as exists is out of all proportion to the needs of the population, not more than 10 per cent of whom receive instruction of any sort. Russian has been made the language of instruction in primary schools in Poland for all subjects except religion. The admission of Jews into the universities within the pale is limited to 10 per cent, in other provincial universities to 5 per cent, and in Petrograd and Moscow to 2 per cent. There were reported to be in the empire Jan. 1, 1911, a total of 123,864 educational establishments, with 7,901,477 pupils (5,412,156 male, and 2,489,321 female)—90,418, with 6,304,366 pupils, in European Russia; 2780, with 235,534, in the cis-Caucasian provinces;

6776, with 475,105, in Poland; 5923, with 213,634, in Finland; 2693, with 144,254, in the Caucasus; 5687, with 309,422, in Siberia; and 9587, with 218,962, in central Asia. There are estimated to be 14,166 non-Christian schools in the empire—Jewish kheders and Mohammedan madrassehs. Secondary establishments include gymnasia, progymnasia, realschulen, and commercial schools, but the attendance is small. A list of universities follows, with an approximate estimate of the number of students: Moscow 9940, Petrograd 8466, Kiev 4098, Kharkov 5274, Yuriev (Dorpat) 2749, Warsaw 1556, Kazan 3484, Odessa 3193, Tomsk 1347, Saratov 197.

Agriculture. The area extending from the Baltic Sea to the Black Sea is exceedingly fertile, and produces cereals in abundance. The northern tundras are frozen nearly the year round, producing pasture grass and berries only for a few weeks in midsummer. The greater part of the area in the interior provinces and nearly all of Siberia are covered with dense forests, and in the south are great sand steppes. The total area returned as under private ownership in 1909 was 102,935,619 dessiatines (1 dessiatine = 2.7 acres), of which 26,812,251 belonged to the peasants, 49,361,865 to the nobles, 16,093,971 to merchants, etc., 154,689,573 to the crown, churches, etc., 15,778,677 to corporations. The distribution of agricultural lands in 1909 is as follows, in dessiatines: European Russia (50 governments), 74,880,300 under crop, 23,549,600 under pasture, 139,543,700 under forest; Poland, 5,163,700 under crop, 867,700 pasture, 2,177,200 forest; Caucasus, 7,546,300 under crop, 1,953,100 pasture, 4,967,200 * forest; Siberia, 5,273,600 under crop, 5,568,500 pasture, 228,189,100 * forest; central Asia, 1,733,600 under crop, 2,597,900 pasture, 15,370,700 * forest (the * indicates the forests administered by the forestry department). In the following table are shown areas in the great divisions under all cereals in dessiatines, the total production of cereals in thousands of poods (1 pood = 36.113 pounds) for 1912, and the mean crop in thousands of poods for the period 1907–11:

	Des.	*P. 1912*	*P. 1907-11*
European Russia	68,848,552	3,396,205	2,852,474
Poland	3,182,682	243,230	215,527
Transcaucasia	1,680,522	85,670	72,684
Western Siberia	3,430,100	155,787	126,672
Eastern Siberia	607,129	27,758	26,344
Steppes	1,747,682	72,048	35,545
Turkestan	2,057,890	106,315	94,387
Total	76,004,557	4,087,007	3,423,674

The above figures are exclusive of winter barley and oats. Hemp and flax are extensively cultivated, and of late years potatoes (37,399,474 tons in 1912) and tobacco (7,716,926 poods of 62 pounds in 1911). In the table below are given official figures for area in hectares, and production in quintals of main crops for comparative years, with the production per hectare in 1912–13:

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*ha.*
Wheat (*a*)	6,997,857	7,870,005	79,874,187	80,841,998	11.4
(*b*)	18,119,961	17,849,265	147,601,442	106,246,121	8.1
Rye (*a*)	28,841,889	28,786,027	242,578,859	286,876,030	8.4
(*b*)	246,778	254,552	1,879,887	1,598,078	7.6
Barley (*a*)	174,084	187,585	1,699,047	1,984,878	9.8
(*b*)	12,088,657	12,294,995	119,699,988	101,595,544	9.9
Oats	17,018,445	17,277,887	160,475,747	128,421,083	9.4
Corn	1,708,908	1,575,885	18,490,411	18,308,113	10.9
Flax	1,487,781	....	6,209,780	....	4.2
Beets *	740,462	....	128,276,527	123,517,160	166.5

(*a*) European Russia (68 governments).
(*b*) Asiatic Russia (10 governments).
* For sugar.

The production of flax given above is for seed. The production of fibre in 1912–13 was 7,725,704 quintals.

Live Stock. Official returns of live stock in 1911 included the following: 34,554,932 horses, of which 26,565,460 for work purposes; of the total number, 22,055,376 were in European Russia, 1,215,001 in Poland, 1,942,707 in the Caucasus, 4,643,371 in Siberia, 4,498,477 in the steppes and central Asia. European Russia had 32,241,216 cattle, 39,143,464 sheep and goats, 10,913,006 swine; Poland, 2,205,648 cattle, 950,761 sheep and goats, 587,228 swine; Caucasus, 5,915,226, 11,605,961, and 1,180,633; Siberia, 6,009,608, 5,529,864, and 1,271,722; the steppes and central Asia, 4,498,477, 21,101,420, and 135,213—making a total for the empire of 51,622,417 cattle, 78,331,475 sheep and goats, and 14,087,802 swine. In 1913 the total number of horses in the empire aged four years and over was given at 25,482,126; of horses under four years, 8,381,043; cattle, 51,354,564; sheep and goats, 73,961,797; swine, 14,232,321.

Owing to the high price of foodstuffs in recent years, tracts of land formerly used for pasture and meadow have begun to be turned over to grain cultivation, and the live stock industry has declined accordingly. The large herds of inferior stock, chiefly fed on rough pasture and wild hay, are giving way to a better grade, better fed and kept, but fewer in numbers. On the other hand, owing to this grading up and to the constant rise of beef prices, the value of cattle has increased approximately 25 per cent.

Fur-bearing Animals in the empire in 1910 were killed as follows: 159,779 ermine, valued at 309,071 rubles; 8101 sable, 184,760 rubles; 52,656 Siberian martin, 73,140 rubles; 4,918,861 squirrel, 1,702,225 rubles; 682,966 hare, 102,684 rubles; 3196 bear, 57,921 rubles; 17,025 wolf, 71,295 rubles; 43,163 fox, 315,653 rubles; 7425 martin, 76,107 rubles; 82,575 weasel, 61,725 rubles; 26,612 arctic fox (*Vulpes lagopus*), 303,313 rubles. No method of conservation is practiced and no close season obtains. The fur-bearing animals are therefore rapidly decreasing, and ultimate extermination will be the inevitable result unless government measures are taken to promulgate game laws as in other countries.

Off Novaya Zemlya and Spitzbergen, the White Sea and the Mourman coast, great numbers of the harp seal are captured annually, as many as 60,000 being taken off the Mourman coast. The Caspian Sea and the Sea of Aral also contain large numbers. The Caspian fisheries yield between 150,000 to 200,000 poods of oil annually, 1000 seals yielding about 10 tons of oil.

Fisheries. The principal regions where fishing is carried on, the number of persons engaged in the industry, the quantity yielded in poods, and the value in rubles are shown in the table below for 1912.

	No.	*Poods*	*Rubles*
Caspian	172,000	28,167,000	66,367,000
Upper Volga	10,000	2,916,000	2,208,000
Black Sea	35,000	4,182,000	6,262,000
Baltic Sea	21,000	2,697,000	5,294,000
Lakes	11,000	1,909,000	2,928,000
Mourman *	14,000	900,000	2,000,000
Total European Russia	263,800	35,671,000	85,281,000
Total Asiatic Russia	33,800	8,252,000	11,924,000
Total Empire	296,200	43,923,000	97,155,000

* And White Sea.

The export of red caviare in 1912 was 105,000 poods, valued at 648,000 rubles; other caviare, 33,000 poods, 2,536,000 rubles.

Forests. Exclusive of Finland, the forests of European Russia cover an area estimated at 345,000,000 acres, of which 61.8 per cent belong to the state, 25.6 per cent to private owners, 7.6 per cent to the peasants, 3.2 per cent to the crown, and 1.8 per cent to other owners. Of the 17,500,000 acres in forest in the Caucasus, about 7,500,000 belong to the state. Seventy per cent of the Ural provinces is under forest, 68 per cent of the northern provinces and 57 per cent of the Lake provinces. Approximately 65 per cent of the total forests of the empire are government-owned, 23 per cent is owned by landed proprietors, and 9 per cent by the peasants. The table below shows area in dessiatines of crown forests, area worked by the government, gross receipts, and net expenses (not including Zemstvo taxes) in rubles for 1910:

	Total D.	*Worked D.*	*Receipts*	*Expenses*
European Russia	105,838,965	84,310,741	62,911,848	17,966,152
Poland	778,536	720,878	6,690,888	748,040
Caucasus	4,980,524	3,099,063	1,003,377	605,478
Siberia	217,192,375	77,455,522	3,135,356	2,058,214
Central Asia	20,854,292	14,264,890	1,099,133	653,998
Empire	349,094,692	179,851,094	74,840,602	22,013,882

With the additional expenses of station maintenance (837,651 rubles), the total expenditure of the crown forest administration amounted to 22,851,533 rubles; leaving a total net profit of 51,989,069 rubles.

Mining and Metals. Vast mineral treasures are found in the Obdorsk, Ural, and Altai mountains. The table below gives the production for comparative years of the most important products of the mining and metallic industries, in poods:

	1909	*1910*	*1911*
Gold	3,467½	3,885½	3,584
Platinum	312½	334½	352½
Silver	941	906	947
Lead	49,678	79,743	75,585
Zinc	586,484	661,638	745,575
Copper	1,125,885	1,385,044	1,594,087
Pig iron	176,122,472	185,115,752	219,118,278
Iron and steel	146,415,257	178,198,437	176,245,287
Manganese	45,092,205	44,653,627	48,122,508
Coal	1,632,218,785	1,521,984,858	1,784,689,649
Naphtha	568,002,720	587,669,880	558,748,855
Salt	148,437,340	126,254,728	122,940,380

For the year 1912 the Russian customhouse returns show a total export of petroleum and petroleum products of 48,591,000 poods, valued at 36,013,000 rubles (50,264,000 poods, 29,039,000 rubles in 1911), made up as follows: lighting oils, 21,773,000 poods, valued at 15,380,000 rubles; lubricating oils, 16,466,000 poods, 12,799,000 rubles; light oils (benzine, etc.), 7,072,000 poods, 6,539,000 rubles. There were Feb. 1, 1912, 4284 oil wells in the Baku districts—2322 producing, 185 drilling, 270 cleaning and deepening, 44 trial bailing, 14 cementing, and the remainder temporarily idle. Petroleum refineries in operation in 1912, 29, of which 11 produced kerosene, 8 part kerosene and part lubricating oil, 3 lubricating oil, 7 benzine, etc. Kerosene produced 1912, 1,247,000 tons, benzine 215,000 tons, lubricating oil 375,000 tons, mazout (petroleum residue) 2,620,000 tons. An estimate of the total output of petroleum for the empire in 1912 is 565,300,000 poods, and for 1913, 560,000,000. The total coal output for the empire in 1912 is given at 1,904,400,000 poods. Pig iron 1912, 256,264,000 poods; steel and rails, 274,946,000; copper, 2,046,780.

Manufactures. The total number of industrial establishments Jan. 1, 1913, was 17,356, employing 1,347,874 men, 571,721 women, and 136,010 male, and 95,586 female, children. Of these, distilleries numbered 2974, producing alcohol aggregating 133,230,000 gallons. Sugar works in operation, 287, with a total sugar production of 86,823,000 poods. Cottons are manufactured, chiefly in Poland. Other manufactures are flax and silk, tobacco, hemp, paper, flour, furniture, etc. Agricultural machinery is now made on a large scale. Distilling is a government monopoly. Prohibitive import duties protect the manufacturer, but the high cost of fuel and the inadequacy of transport facilities are insurmountable obstacles at present to the proper development of home industries.

Commerce. In the table below is shown the 1912 trade, total imports and exports, and imports and exports by great classes, by the great avenues of distribution—A, by way of the European and Black Sea (Caucasus) frontiers; B, across the Asiatic frontier; C, to and from Finland; D, total across all frontiers.

	A	*B*	*C*	*D*
Total imports	972,502	156,683	42,587	1,171,772
Foodstuffs	133,645	71,230	4,772	209,647
Raw mtrls., etc.	505,254	40,432	9,830	555,516
Live animals	1,553	9,401	1,025	11,979
Manufactures	332,050	35,620	26,960	394,630

	A	B	C	D
Total exports ...	1,267,779	201,396	49,622	1,518,797
Foodstuffs	798,587	81,036	31,829	821,452
Raw mtrls., etc.	510,656	70,618	7,776	589,045
Live animals ..	80,053	948	20	81,021
Manufactures .	18,483	48,799	9,997	77,279

The statistics to follow relate to trade by way of the European and Black Sea (Caucasus) frontiers and to and from Finland. Some of the important exports are shown below in thousands of rubles for three years.

	1911	*1912*	*1913*
Cereals, flour, etc.	735,171	546,567	589,942
Eggs	80,747	84,655	90,689
Dairy produce	78,063	70,221	71,159
Sugar	48,259	36,384	6,198
Fish and caviare	7,391	5,953	7,398
Tobacco and cigarettes ...	5,783	5,957	6,544
Meat	5,907	8,934	9,398
Alcohol, gin, and wines ..	7,059	8,791	4,680
Various	25,167	21,686	21,298

In the table below is detailed the export of cereals for three years, values in rubles.

	1910	*1911*	*1912*
Wheat	405,200,000	258,700,000	192,200,000
Rye	29,900,000	42,600,000	29,000,000
Barley	158,400,000	214,400,000	152,800,000
Oats	68,700,000	78,200,000	51,800,000
Corn	19,200,000	57,500,000	37,800,000
Wheat flour ...	11,500,000	9,700,000	7,800,000
Rye flour	5,800,000	9,700,000	6,100,000
Bran	24,500,000	21,500,000	36,300,000

The next table gives imports and exports by great countries of origin and destination in thousands of rubles for four years.

Imports:	*1909*	*1910*	*1911*	*1912*
Germany	354,000	440,900	476,800	519,100
United Kingdom .	128,000	158,500	153,800	189,300
United States ...	57,900	78,800	100,800	85,700
France	49,000	59,400	56,200	55,200
Austria-Hungary .	26,900	34,100	33,800	32,100
Netherlands	18,000	19,300	17,400	19,100
Exports:				
Germany	387,000	390,500	490,100	453,700
United Kingdom .	288,700	315,000	336,700	327,200
Netherlands	189,200	196,000	188,800	154,000
France	89,100	93,600	90,800	98,000
Italy	60,900	49,700	68,000	73,400
Belgium	64,400	66,500	55,300	58,900
Austria-Hungary .	67,800	75,200	52,700	52,500
Denmark	36,700	26,500	35,600	38,100

A decrease is apparent in the export of foodstuffs and an increase in raw and partly manufactured articles. The exports of wheat, rye, barley, and oats were the smallest since 1908. The export of cereals declined in value 25.7 per cent. The export of eggs in 1912 was valued at 84,655,000 rubles; butter, 68,077,000 (80,757,000 and 70,862,000 in 1911). Leaf tobacco, 4,633,000 rubles; alcohol and spirits, 8,338,000; timber, 152,500,000.

The import of cereals has declined. The import of tea by all frontiers in 1912 was 2,267,501 poods black, 1,273,943 brick, 504,049 green. The import of raw cotton by European frontiers was valued at 81,628,000 rubles and by Asiatic frontiers, 12,608,000. An increase in the import of pig iron is due to a government bill permitting its importation under a temporarily reduced tariff.

SHIPPING AND COMMUNICATIONS. The latest available figures are for 1911. In the table below are shown number and tonnage of ships entered and cleared for comparative years:

	Number		*Tons*	
Entered:	*1910*	*1911*	*1910*	*1911*
White Sea....	1,180	1,054	880,000	797,000
Baltic	7,446	7,698	5,547,000	5,805,000
Black & Azov.	5,385	4,749	7,555,000	7,844,000
Pacific Coast .	....	725	......	1,068,000
Total	13,911	14,226	14,982,000	15,014,000
Cleared:				
White Sea ...	1,079	1,101	829,000	794,000
Baltic	7,525	7,729	5,629,000	5,837,000
Black & Azov.	5,220	4,575	7,424,000	7,163,000
Pacific Coast .	....	708	......	1,035,000
Total	13,824	14,013	13,882,000	14,829,000

The Caspian Sea coasting traffic totaled 16,903 vessels, of 10,094,000 tons, in 1911; the Danube coasting traffic, 1230 vessels of 479,000 tons. The registered merchant marine Jan. 1, 1913, was as follows: White Sea, 490 vessels, of 35,023 tons (70 steamers, of 12,230 tons); Baltic, 963, of 186,129 (243 of 12,908); Black and Azov, 1322 of 281,895 (413 of 230,826); Pacific, 47, of 20,308 (38, of 19,896); Caspian, 823, of 232,250 (252, of 111,054)—a total of 3645 vessels, of 756,605 tons (1016 steamers of 486,914).

Exclusive of Finland there are in European Russia 153,782 miles of rivers, canals, and lakes, and in Asiatic Russia 86,422; of these, 20,670 miles in European and 21,421 miles in Asiatic Russia are navigable for steamers, 7482 and 8678 for small sailing vessels, and 88,739 and 33,224 for rafts.

In the following table are shown the length in miles of railways in European Russia and in Asiatic Russia; length of telegraph lines and of wires; number of letters and post cards carried, books, periodicals, and parcels sent by post, and money and postal orders registered:

Railways:	*1909*	*1910*	*1911*
E. Russia	34,465	34,581	35,447
A. Russia	10,485	10,497	10,578
Telephones:			
Lines ..	120,865	126,488	134,036
Wires ..	425,969	453,580	476,177
Posts:			
Letters .	1,209,656,000	1,351,456,000	1,463,258,000
Book post	610,926,000	677,558,000	718,047,000
Postal orders .	41,828,000	46,055,000	47,670,000

The total length of railways in operation Jan. 1, 1913, was 46,839 miles, including 2347 miles in Finland and 1079 miles of the Eastern China Railway. Lines under construction in 1913, 4991 miles of which 2823 State. Lines authorized Jan. 1, 1914, 4205 miles. Passengers carried in 1912, 235,179,382; freight transported, 229,283,479 tons. Post offices 1912, 16,991.

The Russian ministry of ways of communication announced, during 1914, that the mileage of Russian railroads was 43,788, of which 29,594 miles belonged to government railroads. In addition the railroads in Finland covered 2430 miles and the Eastern Chinese Railroad 1073 miles. There were also temporary lines covering 2031 miles, and 5657 miles under construction, while permission had been granted for new building to the extent of 3899 miles. The Russian railways naturally played an important part in the great European War of 1914. These railways have a different gauge from other European lines.

During the year the Russian government decided to commence the construction of a railway between Petrozavodsk and Kem, and it was proposed to extend the line to the port of Alexandrovsk on the White Sea, so as to connect that body of water with the main Russian railway system. The line was to be completed within a year, and its construction was to be undertaken by the Olonetz Railway Company, which was to build a line connecting Petrozavodsk with Zvank on the Northern Railway system.

The construction of a railway has been approved by the Russian council, to extend from Moizekul, on the Pernau-Revel narrow gauge line, to Riga, with a branch line to Mühlgraben, near the mouth of the Dvina. A line is projected between Kharkov and Kherson, to be built by the government. The new line from Odessa to Bakhmach was to be completed in 1914; the bridge, 1200 yards long across the Dnieper was finished in February, 1913. Surveys were completed for the Kahetian Railway, a private enterprise. The Amur Railway will ultimately be carried along the north bank of the Amur to Nikolaievsk. With the improvement of navigation facilities of the lower Amur and the Amur estuary, a complete system by water and rail will unite Central Siberia with the Pacific. A line connecting Peking directly with the Siberian Railway is to be built from Peking north through Eastern Mongolia; the section from Peking to Kalgan (135 miles) is in operation.

FINANCE. Gold is the standard of value, and the ruble, par value 51.456 cents, is the unit of value. In the table below are shown in rubles actual revenue and expenditure, ordinary and extraordinary, for 1912, and the budget estimates for 1913 and 1914.

	1912	*1913*	*1914*
Rev. ord.	3,105,916,930	3,240,559,006	3,572,169,473
" extraord.	1,812,928	10,000,000	41,399,925
Total	3,107,729,862	3,250,559,006	3,613,569,398

	1912	*1913*	*1914*
Exp. ord.	2,721,763,595	3,012,264,284	3,309,523,517
" extraord.	449,296,921	238,294,722	304,045,881
Total	3,171,060,516	3,250,559,006	3,613,569,398

The details of the budget for 1914 are given in the table below in thousands of rubles:

Rev.	*1000 r.*	*Expend.*	*1000 r.*
Direct taxes	276,007	Public debt	402,108
Indirect taxes	781,442	Council	8,317
Customs	287,987	Holy Synod	53,098
Royalties	1,070,228	Civil list	16,360
Domains	1,119,890	Foreign affairs	7,775
Land sales	1,985	War	621,565
Redemptions	945	Marine	246,111
Repayments	118,449	Finance	498,168
Various	15,352	Commerce, etc.	70,898
		Interior	206,540
Total ord.	3,572,169	Instruction	169,579
Extraord.	41,400	Communications	719,089
		Agriculture	157,520
		Justice	104,909
		Audit	12,919
		State stud	4,588
		Other	10,000
		Total ord.	3,309,524
		Extraord.	304,046
Total	3,613,569	Total	3,613,569

The national debt stood Jan. 1, 1914, at 8,811,380,000 rubles. The total gold in the state bank Nov. 1, 1914, was 1,832,742,908 rubles.

The important items of increased expenditure for the ministry of war in 1914, were for construction of barracks, etc., 10,500,000 rubles; supplies, 7,400,000; extra pay to soldiers serving beyond their term, and their families, 3,800,000 rubles; engineering equipment, 4,600,000. The project for 1914 of the ministry of marine includes 10,180,000 rubles for new construction, 13,717,000 for naval ports, 6,171,000 increased expenditure for cruising, owing to the increased number of battleships riding the Baltic and Black Seas and to the increased cost of fuel. Extraordinary expenditure includes 435,000 rubles consequent upon the Russo-Japanese War—300,000 rubles in settlement with the Red Cross Society, 35,000 rubles auditing expenses, etc., 110,324,485 rubles for railway construction—63,280,595 for the Amur Railway, 15,000,000 for the Merefa-Kherson Railway, 9,900,000 for the second track on the Siberian Railway, 6,000,000 for the strengthening of the Ussurisk Railway, and 2,016,000 for the Moscow Circular Railway, etc. Additional extraordinary expenditures were 1,406,300 rubles advances to railway companies for construction on the Chinese and Ussurisk lines, and 18,000,000 rubles for harbor construction and improvement.

ARMY. Statistics and details regarding the strength and organization of the Russian army, always more or less meagre and non-authoritative, were naturally more so in 1914, in connection with the mobilization of the troops and the actual prosecution of the war. The order for the partial mobilization of the Russian army issued on July 28 was a main cause of the war, as Germany declared war on Russia August 1. It may be desirable, however, to consider the peace strength of the Russian army on a basis of compulsory service, personal service being required from 20 to 43 years of age, and 500,000 men being forthcoming yearly. An estimate made of Russia's peace strength was 1,365,000 men, exclusive of 155,000 Cossacks and old soldiers. In 1905, after Russia had been defeated by Japan, there was considerable reorganization and modernization of the army, and between 1905 and 1914 the yearly expenditures for the army increased from over $200,000,000 to over $320,000,000, and the mechanical efficiency, including the aviation branch, was highly improved, while a comprehensive scheme of rapid and effective mobilization was worked out. The Russian army had modern quick-firing guns, but their rifles dated from 1891.

The disposition of the Russian forces in Europe immediately previous to the outbreak of the war, was as follows:

St. Petersburg military district, guards corps, first, eighteenth, and twenty-second army corps with the first and second guards cavalry divisions; Vilna military district, second, third, fourth, and twentieth army corps, with the second and third cavalry divisions; Warsaw military district, sixth, fourteenth, fifteenth, nineteenth, and twenty-third army corps, with the fourth, thirteenth, fourteenth, sixth, fifteenth, seventh cavalry divisions, and the first Don Cossack cavalry division; Kiev military district, ninth, tenth, eleventh, twelfth, and twenty-first army corps, with the ninth, tenth, eleventh, and twelfth cavalry divisions, and the second Cossack cavalry division; Odessa military district, seventh and eighth army corps, with the eighth cavalry division; Moscow military district, the grenadiers' corps, fifth, thirteenth, seventeenth, and twenty-fifth army corps, with the first cavalry division; Kasan military district, sixteenth and twenty-fourth army corps, with the fifth cavalry division.

Before the outbreak of the war the Russian army numbered about 1,700,000 trained soldiers, with a decrease occurring after April 14, when the fourth class was sent home, reducing the figures to about 1,300,000 men. Under normal conditions the number of recruits would have been increased by 150,000 in 1914, with a similar increase for the ensuing two years. Then the peace effectives would have been brought up to 1,760,000. The time of service for the infantry remained at three years, and that for the other troops was placed at four years. Previous to the outbreak of the war, considering the extent of the frontier, the Russian force was below the armies of Germany and Austria, and on the same basis would have required a peace effective of 3,000,000 men.

NAVY. The number and displacement of warships built, of 1500 or more tons, and of torpedo craft of 50 tons and over, were July 1, 1914, as follows: Battleships, dreadnought type (having a main battery of all big guns, 11-inch or more in calibre), none built (7, of 159,509 tons estimated, building); 7 battleships, predreadnought type (of about 10,000 or more tons displacement and with main battery of more than 1 calibre), of 98,750 tons; 2 coast-defense vessels, of 10,380; battle cruisers, none built (4, of 128,000 building); 6 armored cruisers, of 63,500; 9 cruisers, of 62,845 (and 8, of 53,600 tons, building); 91 torpedo-boat destroyers, of 36,748 (and 44, of 53,664 tons, building); 14 torpedo boats, of 2132; 30 submarines, of 6506 (and 19, of 13,284 tons, building)—a total tonnage built of 270,861 and 407,957 building; total tonnage built and building, 678,818. Several powerful ships under construction in 1914 should be in commission by the time the Baltic again becomes navigable. The protected cruisers outside the Black Sea numbered four. The Baltic fleet was commanded at the beginning of the war by Admiral von Essen. The total personnel is about 80,000. Air craft included 6 military dirigibles on hand and 10 ordered, and 250 military aëroplanes on hand, including monoplanes, biplanes, and hydro-aëroplanes.

GOVERNMENT. All executive, legislative, and judicial powers are vested in an autocratic Czar, under the title Emperor of all the Russias. There is a nominal constitution. The council of empire includes an equal number of elected members and members nominated by the Czar. There is a national assembly (Duma) of 442 members. Reigning Czar, Nicholas II, born May 18, 1868, succeeded his father Alexander III, Nov. 1, 1894. In the month of his succession he married Princess Alix of Hesse. The heir-apparent, Alexis, was born Aug. 12, 1904. The ministry in 1914 was composed as follows: J. L. Goremykine, president of the council of ministers; A. A. Maklakov, interior; Gen. W. B. (Count) Fredericksz, minister of the imperial household; S. D. Sazonov, foreign affairs; Gen. W. A. Sukhomlinov, war; Admiral I. K. Grigorovich, marine; J. G. Stcheglovitov, justice; S. I. Timachev, commerce; S. V. Rukhlov, communications; V. K. Sabler, procurator of the Holy Synod; A. V. Krivocheyn, agriculture; P. A. Kharitonov, state comptroller; Dr. L. A. Casso, instruction; P. L. Bark, finance. President of the council of empire, M. Akimov.

HISTORY

DISRUPTION OF THE OCTOBRIST PARTY. The division of the Octobrist group into three sections, as recorded in the last YEAR BOOK, became more clearly marked in January. Holding the balance of power between the Right and the Left, the Octobrist group occupied a position of exceptional significance. If the Octobrists had remained faithful to the decisions taken at their party congress (November, 1913), they would have inclined to the Left; for the party congress had condemned the government, reaffirmed the manifesto of October 30, and declared that the rejuvenation of Russia must be based on the principles of constitutional government and civil liberty. The Right wing of the party, however, refused to recognize the resolutions of the congress as binding upon the individual members of the party. The 14 members who constituted the extreme Left wing of the group openly seceded. Twenty-two of the moderates formed a third group under the leadership of Rodzyanko, the president of the Duma. When the Duma reassembled on January 27, the Left Octobrists numbered 20; the Centre Octobrists, 67 strong, called themselves the Zemstvo Group; the Right Octobrists remained unorganized.

CABINET CHANGES. On February 12, Prime Minister Kokovtsev was unexpectedly removed from office, receiving the title of count as a reward for his services; the septuagenarian statesman Goremykine was appointed to succeed Kokovtsev as premier; and M. Bark was entrusted with the portfolio of finance, which the ex-premier had also held. M. Goremykine was to labor for the conciliation of the various inharmonious elements in the cabinet. M. Bark was charged with the duty of finding new revenues to take the place of the government brandy monopoly, and "to develop the productive capabilities of the land and the nation." Count Witte, who had borne a conspicuous part in the antialcohol crusade, was placed at the head of a commission to coöperate with the government in the reorganization of the financial system; for a very considerable part of the public revenues had been derived from the sale of brandy. The exceptional situation created by the war in the latter half of the year enabled the government to introduce sweeping measures for the prohibition of the sale of alcoholic drinks; but as to the absolute character of the prohibition there was still room for doubt.

Premier Goremykine experienced almost as much difficulty with the Duma as had his predecessor. The Duma passed resolutions condemning the influence exercised by the government over the last elections, and deploring the killing of 150 strikers at Lena by gendarmes. The Duma prepared a bill to strengthen the senate against the government. Another bill extended the rights of married women. The budget submitted by the government was contemptuously rejected by the Duma on May 15 by a negative majority of 70 votes. Still further irritation was caused by the announcement that the government had determined to punish the Social Democrat Chheidze for advocating republicanism in a speech before the Duma. Gendarmes had to be called in to eject the Social Democratic deputies, who caused pandemonium in the Duma by their frantic protests against what they considered a flagrant breach of parliamentary privilege.

FOREIGN RELATIONS. Russian relations with the Triple Alliance were perturbed by several unfortunate circumstances. In the first place, the conflict between German and Russian diplomacy in the Near East had become more than ever irritating. The Germans felt that Russia had offered undue opposition to the German military mission to Turkey (see TURKEY). The Russian representative at Sofia had disseminated dissatisfaction regarding the terms of the German loan to Bulgaria (see BULGARIA). The Czar's visit to Rumania (see RUMANIA) was regarded as a public recognition of the fact that Rumania was being weaned away from her old friendship with the Triple Alliance. To German observers it seemed as if Russia was working more actively than ever before for the union of the Slavic nations under Russian hegemony and the establishment of Russian predominance in the Near East. Another circumstance which caused alarm in Berlin and Vienna was the growth of the Russian army. Coupled with the augmentation of the army was the development of railways which would enormously add to Russia's military strength by facilitating the movement of troops and supplies. The Germans, moreover, felt themselves directly menaced by the triumph of the Three Year Law in France (see FRANCE), and the July visit to Russia of M. Poincaré and M. Viviani, confirming the solidarity of the Dual Alliance. Finally, no little agitation was caused by the anticipation that, when the time should shortly arrive for the renewal of the Russo-German commercial treaty, Russia would demand more favorable terms. These various elements of antagonism figured prominently in the alarmist campaign in which the chauvinistic journals of both Russia and Germany engaged. The Russian foreign minister Sazonov, however, speaking before the Duma on May 23, emphatically affirmed the peaceful character of Russian policy and expressed a desire that the jingoistic journalists in Russia as well as in Germany should abandon their provocative polemics.

RUSSIA AT WAR. As the foremost Slavic nation, and as the champion of the small Slav nations of the Balkans, Russia was not inclined to stand by idly when Austria-Hungary, at the close of July, took up arms to punish Servia for the Sarajevo crime. It is noteworthy that the Russian government at the moment was embarrassed by a serious strike in St. Petersburg (Petrograd). But the abrupt action of Austria-Hungary, and the brusque declaration of war by Germany (August 1), when Russia refused to stop mobilization, called forth a mighty outburst of national enthusiasm which, at least for the moment, drowned all social and industrial disputes. The feeling was extremely bitter against Germany. Excited by the news of the insolent treatment of the Russian ambassador and his party in Berlin, a mob in St. Petersburg smashed the windows of German business houses, threw stones through the windows of the German Embassy, pitched the furniture into the street, and dumped into a nearby canal the two heroic bronze figures which had adorned the roof of the German Embassy. On August 8 the Czar received the Duma and the Imperial Council in the presence of all his ministers and the generalissimo Grand Duke Nicholas. The Czar's speech is worth quoting: "In these momentous days of excitement and unrest, through which Russia is passing, I bid you welcome. The German Empire and later Austria-Hungary have declared war on Russia. The tremendous outburst of patriotic sentiment, of love and loyalty to the throne which, like a tempest, traversed our entire land, is to me, as it is to you, a pledge! I hope that the great Russia will conduct to a happy conclusion the war which the Lord has sent. From this unanimous storm of love and zeal to sacrifice everything, even life itself, I gain strength to face the future with calmness and fortitude. We are not only defending the dignity and honor of our country, but we are also fighting for our Slavic brothers, our co-religionists and kinsmen. At this moment I behold with joy how the unification of the Slavs with Russia is being strongly and unremittingly carried to completion. I am convinced that each one of you will be found in his place ready to help me stand the test, and that all, beginning with myself, will do their duty. The God of the Russian nation is great!" In token of the patriotic unanimity of Czar and nation, a new flag was adopted, combining the national colors with the imperial arms. Disliking the German sound of the name of the capital, the Russian government substituted the Slavic word Petrograd for the familiar St. Petersburg. While the predominant sentiment in Russia was a militant combination of loyalty to the Czar, zeal for the national orthodox church, and pride in the possession of Slavic as opposed to Germanic culture, at the same time some effort was made to conciliate discontented minorities. The Poles were promised autonomous freedom (see WAR OF THE NATIONS). The Roman Catholics, mostly in Poland, were pleased by the Czar's generous pecuniary contribution to the expense of re-building Catholic churches which had been destroyed by the German guns. Jews were allowed to become officers in the army. Leading anarchists with spontaneous enthusiasm espoused the national cause. The Socialists, however, by their international creed opposed to war, and by their party associations friendly to Germany, secretly conducted an anti-war propaganda. Late in November the Petrograd police discovered a revolutionary Socialist plot and arrested a number of Social Democratic leaders, including five members of the Duma—MM. Petrovsky, Badayev, Mouranov, Samoilov, and Chagov. The diminution of the revenues by the prohibition of the sale of alcoholic liquors and the enormous expenditure caused by the war subjected the Russian treasury to a severe strain. Up to the end of October, the war cost Russia 1,795,000,000 rubles ($892,500,000). To cover expenses, various issues of treasury notes, short-time bonds, and loans had been made, totaling 1,850,000,000 rubles ($925,000,000). New revenues were to be raised by the levy of a tax on incomes and a personal tax on men absolved from military service. The estimates for 1915 contemplated total ordinary and extraordinary expenditures of 3,234,308,414 rubles, as compared with 3,613,569,398 rubles for 1914.

See also AUSTRIA-HUNGARY; BULGARIA; CHINA; GERMANY; INTERNATIONAL ARBITRATION, *Bryan-Wilson Treaties;* RUMANIA; STRIKES; WAR OF THE NATIONS.

RUTGERS COLLEGE. An institution for higher education, founded at New Brunswick, N. J., in 1766. The students enrolled in all departments of the college in the autumn of 1914 were 1115, of whom 440 were undergraduates; 450 in the summer session; and 225 in summer short courses. The faculty numbered about 55. The most notable change in the faculty during the year was the resignation of Alexander J. Inglis, professor of the Science of Education. There was a gift of $45,000 for the purchase of additional campus grounds, and one of $25,000 for a swimming pool. The endowment of the college is $739,000, and the annual income $245,000. The library contains 76,643 volumes. The president is Rev. W. H. S. Demarest, D.D.

RYAN, THOMAS. An American diplomat, died April 5, 1914. He was born in Oxford, N. Y., in 1837, was educated at Dickinson Seminary, Pa., and admitted to the bar in 1861. He served in the Union Army from 1862 until 1864, and in the latter year was mustered out with the rank of captain, on account of wounds received in the battle of the Wilderness. He engaged in the practice of law at Topeka, Kan., from 1865, was county attorney for eight years, and from 1873 to 1877 was Assistant United States Attorney. In 1877 he was elected to Congress and was reëlected to successive Congresses up to and including the Fifty-first, but resigned in 1889 to become United States Minister to Mexico, in which post he remained until 1893. He was appointed first assistant secretary of the interior in March, 1897, and served in this office for several years.

RYE. The world's rye production in 1914, as indicated by the estimates for the principal producing countries, was not equal to the high yield of 1913, which amounted to 1,885,000,000 bushels, but it was nevertheless nearly an average crop, which is about 1,750,000,000 bushels. As compared with 1913 the estimated output of rye in 1914 was from three to four per cent smaller, which was largely accounted for by a reduction of about one per cent in acreage. The estimated production of the principal European countries was as follows: Russia 940,000,000 bushels (of which over 6,000,000 bushels were spring and the rest winter rye), Prussia 334,000,000 bushels, Hungary 48,000,000, Spain 29,000,000, Sweden 24,000,000, Belgium 23,000,000, Denmark 19,000,000, the Netherlands 14,000,000, Bulgaria 10,000,000, and Italy 5,000,000 bushels. Asiatic Russia was reported as having produced over 31,000,000 bushels, making a total Russian production of approximately 967,000,000 bushels. In Belgium, Denmark, Spain, Sweden, and Asiatic Russia the production was higher, and in the other countries mentioned, lower than in the preceding year. While comparatively little rye is grown in countries of the southern hemisphere, the acreage in Argentina increased from 32,000 acres in 1910, to 230,000 acres in 1913. Canada devoted 111,280 acres to rye in 1914, and produced, as estimated, about 2,020,000 bushels, mostly in the province of Ontario, the average yield per acre on this basis being approximately 18 bushels as compared with 19.28 bushels the year before. The production of rye in the United States as reported by the Department of Agriculture, amounted to 42,779,000 bushels, grown on 2,541,000 acres, at an average yield per acre of 16.8 bushels. In 1913 the rye area was 2,557,000 acres, the total yield 41,381,000 bushels, and the average yield 16.2 bushels per acre. The crop of 1914, based on a bushel value of 86.5 cents, the average price received by farmers December 1, was worth $37,018,000, the highest total value of the crop ever recorded. While the crop of 1913 was almost as large, its total value, at the corresponding price of 63.4 cents per bushel, was only $26,220,000. According to data published by the *American Agriculturist,* Wisconsin was the leading State in 1914, with a production of 7,560,000 bushels. The States ranking next, given in their order, were Michigan with 6,460,000, Minnesota with 5,415,000, Pennsylvania with 5,094,000, North Dakota with 2,400,000, and New York with 2,340,000 bushels. The highest average yield per acre by States, 20 bushels, was reported for Iowa, California, and Washington.

SABOTAGE. See SYNDICALISM.

SABULITE. See CHEMISTRY, INDUSTRIAL.

SAFETY, NATIONAL COUNCIL FOR INDUSTRIAL. See WORKMEN'S COMPENSATION.

SAFETY AT SEA. The International Conference on Safety at Sea, which had been in session from Nov. 12, 1913, adjourned on Jan. 20, 1914, when a comprehensive convention was signed by the representatives of the United States, Austria-Hungary, Belgium, Denmark, France, Germany, Great Britain, Italy, the Netherlands, Norway, Russia, Spain, and Sweden. This convention was the most important step ever taken by the maritime nations to secure increased safety at sea, and it was ratified in May by the German Reichstag, and on August 10, the British Parliament passed a bill giving it effect. The outbreak of the war in August affected the preliminary steps for ratification in France, Spain, the Netherlands, Belgium, Italy, and Austria-Hungary, where under ordinary circumstances the agreement would have been ratified in the early autumn. As the Parliaments of Denmark and Sweden were not to assemble till early in 1915 the agreement could not be ratified by these bodies until that date. On March 17, 1914, the agreement was transmitted by the President of the United States to the Senate, but was not acted upon by that body until December 16, the ratification being accompanied by a proviso reserving to the United States the right to abrogate treaties, agreements, and conventions and to impose such higher standards of safety and provisions for health, protection, and comfort of passengers, seamen, and immigrants upon all vessels in United States waters as shall be enacted for United States vessels. The consent of the other powers to such modification of the convention seemed unlikely so that it would prove fruitless so far as the United States was concerned. July 1, 1915, was the date stipulated for the agreement to go into effect, but the outbreak of the war naturally affected the general ratification.

The fundamental consideration in this important convention was a Safety Certificate which was to possess certain international attributes. This certificate would signify that the nation which issued it certified that it had inspected and certified the vessel concerned, and that it complied in an efficient manner with the requirements of the nation. The government issuing the safety certificate is bound by the convention fully to guarantee the completeness and efficiency of the inspection certificate, and it was to be regarded by other governments as having the same force as the certificate issued to their own vessels. Every vessel holding a safety certificate is subject to control by the officers duly authorized by their governments, in so far as this control is directed towards verifying that there is on board a valid safety certificate, and if necessary, that the conditions of the vessel's seaworthiness correspond substantially with particulars of that certificate, or, in other words, that the vessel could proceed without danger to the passengers or crew. The above was incorporated in two important articles of the convention, and the adoption of these two articles was only reached after patient effort, as it involved fundamental principles of international law, and harmonizing the different aspects of the subject held by the different nations. The convention was made to establish international standards and the discussion of various provisions which were elaborated for some 70 pages of printed matter. Instead of a tonnage rule for life boats, the convention adopted the more practical rule that the length of the vessel was the principal factor in determining the number of davits which may be erected, and as the number of davits determines the number of life boats which may be launched promptly, the life boat capacity was to be fixed in relation to the vessel's length. Life boats in excess of the total number of persons on board were not required. The convention rules, it was stated, if complied with during the 5647 transatlantic voyages of passenger ships between the United States and Europe during 1912 and 1913, would have provided life boats for all on board except in 392 cases. The convention further provided for a continuous wireless watch on all vessels equipped with the wireless apparatus, and the master of every vessel is bound to proceed to the assistance of a vessel in distress. The convention applies to all mechanically propelled ocean vessels, which carry more than 12 passengers, in foreign trade between the nations which ratified the convention, but every nation is at liberty to enact its own legislation for coasting trade, and is at liberty to exempt or release from the convention vessels which go less than 200 miles from the nearest coast. The convention also discussed rules of construction, especially those involving subdivisions, or water-tight compartments and bulkheads, which were quite technical, and were discussed in the various countries by organizations of naval engineers. Other topics such as providing an ice patrol, this to be done by the United States government, revision of international regulations for preventing collisions, rules for construction, and maintenance of wireless were provided for in some detail. This convention and report were contained in *Senate Document 463, 63rd Congress, Second Session*, which should be consulted by all specially interested.

Sinking of Empress of Ireland. The year 1914 had its most disastrous maritime catastrophe in the sinking of the Canadian Pacific Steamship, *Empress of Ireland*, in the lower St. Lawrence, about 200 miles from Quebec on May 29, when it was struck by the collier *Storstad*. This collision occurred at 2:12 A.M. in a dense fog, and the total loss of life was 1027 out of the 1479 passengers and crew, sailing from Quebec. Of these, 56 of the 92 first-class passengers perished, 209 of 256 second-class, 582 of 718 third-class, and 180 of the crew of 413 were lost. This disaster gave rise to an inquiry conducted by a commission composed of Lord Mersey, Sir Adolphe Routhier of Quebec, and Chief Justice McLeod.

Discussion was aroused, soon after the disaster, as to why the *Empress of Ireland* sunk so quickly, being a comparatively new vessel, built in 1906, with 4 complete steel decks from stem to stern, and with 10 transverse water-tight bulkheads, terminating in each case at the upper deck. These bulkheads were designed in accordance with recommendations of the British Board of Trade Bulkhead Committee of 1891, and two adjacent compartments could be flooded without sinking the ship below the margin of safety down below the upper deck. There were 24 water-tight doors in these transverse bulkheads, all of which apparently were open at the time of the collision, and the Board of Inquiry after hearing the evidence concluded that nearly all the water-tight doors on the starboard side were open, and those on the upper deck remained open after the collision, while a large proportion of the porthole openings in the side of the ship were also open after the collision occurred. The stem of the *Storstad* penetrated the side of the *Empress of Ireland* some 21 feet, making a hole of about 46 feet, some 25 feet of which was below the water line. As the collision occurred in the immediate vicinity of water-tight bulkheads between the two boiler rooms, these compartments were immediately flooded, and as the water-tight doors were open, the adjoining compartments were flooded also. The commission of inquiry in closing its report suggested, that in foggy weather, it would be desirable to close all water-tight doors and portholes below the top of the water-tight bulkheads, and that, whenever practicable, water-tight doors and bulkheads should be closed at sunset and kept closed until sunrise. Furthermore, as the ship foundered so soon after the collision, there was little or no opportunity to use the life-saving appliances on board, and this was rendered still more difficult by the list to port which the vessel received, so as to render useless the life boats of the port side of the vessel. In fact they were worse than useless and even injured people as they clattered down the sloping decks. Of the life boats on the starboard side, only six were launched, and the question arose whether rafts should not be placed in such a position on the upper deck that they would float automatically on the water as the ship sank. The Commission of Inquiry, in its report on July 7, blamed Third Officer Tuftenes of the collier, stating that he was wrong and negligent in laying his course, and negligent in keeping the navigation of the vessel in his own hands and failing to call the captain, when the fog was seen coming on.

An extraordinary condition of the collision was that it was due to a blunder, as the vessels sighted each other when more than three miles apart, and were traveling on courses which would have allowed them to pass in safety. The change of course on the part of the third officer was fatal. Another defect, that possibly calls for remedy in future construction, was the fact that there was no way available to close the bulkhead doors from the bridge. The disaster called attention to the need of better measures for safeguarding navigation in fogs, especially on such waterways as the St. Lawrence River, and it was suggested that compulsory use of submarine bells in such navigation might be advantageous.

OTHER DISASTERS. Another disastrous ship collision on the St. Lawrence River caused the loss of 14 persons, when the government steamer *Montmagny* was rammed by the Black Diamond collier *Lingan*, at 5 o'clock on the morning of September 18, in a fog on the Beaujean Banks, 1 mile below Crane Island, and 26 miles from Quebec. The *Montmagny*, which sank in three minutes after the collision, was a steel twin screw steamer of 1269 registered tonnage, employed in the Department of Marine Fisheries, while the *Lingan* was a collier of the same type as the *Storstad* which sunk the *Empress of Ireland*. She was of 4348 tons burden, and was bound for Montreal.

A serious collision occurred in the English Channel on June 17, when the *Kaiser Wilhelm, II* of the North German Lloyd Line and the 3000 ton grain steamer, *Incemore*, met in collision. The *Kaiser Wilhelm, II* was struck amidships, on the starboard side, as she was near the Needles, and was compelled to return to her anchorage off Southampton, where the passengers were transferred to the *Imperator*, which left Southampton the following day. The *Incemore* was badly damaged about the bow, and was compelled to put into port immediately.

The steamship *Monroe* of the Old Dominion Line was sunk, on January 31, by collision with the steamship *Nantucket* of the Merchants and Miners' Line, in a light fog at 2:00 A. M., about 50 miles off the Virginia Capes. The *Monroe* was struck on her starboard side, just forward of the pilot house, and proceeded to fill rapidly, so that about 4 minutes after the collision occurred she was nearly on her beam ends, and it was only possible to launch the lifeboats on the starboard side, and of these one sank in the collision, and one was swamped while being launched. Within 10 minutes the *Monroe* foundered in about 15 fathoms of water, and some of the passengers that were not saved in her own boats were picked up by the boats from the *Nantucket*, 19 passengers and 22 of the crew being lost. An official inquiry held the captain of the *Nantucket* guilty of negligence and his license was revoked. It was stated that the *Monroe* could have been seen nearly a mile away, and that on hearing her wheels the *Nantucket* could have so changed her course as to have avoided the collision.

The *Admiral Sampson* of the Pacific Alaska Navigation Company was sunk off Point-No-Point, Wash., on August 26, as the result of a collision with the Canadian Pacific steamer, *Princess Victoria*. The collision occurred in a heavy fog with both vessels proceeding under reduced speed, and the *Admiral Sampson* sank in 4 minutes, with a loss of 11 lives. The *Princess Victoria* struck the other ship directly on a line with the after hatch, opening a 12-foot gash in the hull and crushing several large containers of fuel oil, which caught fire. This compelled the *Princess Victoria* to back away, as flames enveloped both vessels, so that she could no longer keep her nose pressed into the hole. The *Admiral Sampson* was of 2262 gross tons, and 16 years old.

SAFETY FIRST. See RAILWAY ACCIDENTS; and WORKMEN'S COMPENSATION.

ST. HELENA. An island in the South Atlantic; a British possession. It is distant from Cape Town 1695 miles, and has an area of 47 square miles. The census of May, 1901, returned a population of 9850, of whom 4636 were Boer prisoners of war, and 1428 were members of the garrison. The census of April, 1911, returned 3520 inhabitants, including the garrison staff and 43 sailors of ships in port. Jamestown is the capital and only town, with 1439 inhabitants. St. Helena is a supply station for ships in transit, and has never produced any article for export excepting flax fibre. An effort is being made to revive this industry. Imports and exports for 1912 totaled £41,749 and £6150 respectively. Revenue 1912, £10,042; expenditure, £9449. The Governor in 1914 was Major H. E. S. Cordeaux.

ST. KITTS AND NEVIS. West Indian islands constituting, with Anguilla, a presidency of the Leeward Islands colony (q.v.). St. Kitts, or St. Christopher, has an area of 68 square miles, Nevis 50, and Anguilla 35. The total population was 43,303 in 1911. About 17,000 acres are planted to sugar cane, and 5000 to cotton. The export of sugar for 1911 was 11,130 tons; molasses, 2339 puncheons; rum, 19,380 gallons; sea-island cotton, 782,933 pounds. Stock raising is practiced. Total imports for 1912 were valued at £252,637 (£306,666 in 1911); exports, £187,961 (£190,747). Revenue 1912–13, £57,228 (£58,002 in 1911–12); expenditure, £53,508 (£50,736). Total tonnage entered and cleared 1912–13, 684,445, of which 583,272 tons British. Public debt 1912–13, £46,854. Customs revenue 1912–13, £36,203. Administrator, 1914, T. L. Roxburgh (appointed 1913). Basseterre is the capital. See LEEWARD ISLANDS.

ST. LUCIA. A British West Indian island; one of the Windward Islands colonies. Area, 233.29 square miles, with (1911) 48,637 inhabitants. The capital is Castries, with 6266 inhabitants; it has a good harbor and is a port of registry. The town of Soufrière has about 2300 inhabitants. Products for export are sugar, cacao, logwood, and spices. Limes are being extensively planted, and rubber and cotton grow well. Imports and exports for the year 1912 were valued at £315,361 and £287,716 respectively. Revenue 1912–13, £66,293; expenditures, £67,825. Shipping entered and cleared, 3,490,042 tons, of which 2,980,840 tons British. The Administrator in 1914 was E. J. Cameron, appointed 1909.

ST. MARYS FALLS CANAL. See CANALS.

SAINT-PIERRE AND MIQUELON. A French colony off the southeastern coast of Newfoundland, including some smaller islands. Area, 241 square kilometers (93 square miles), carrying a population of 6482. Imports, 1912, 5,179,422; exports, 6,002,982. Vessels entered in the 1911 trade, 150, of 63,264 tons. The budget balanced in 1911 at 503,000 francs; the debt stood Jan. 1, 1912, at 332,000 francs. The Administrator in 1914 was M. Marchand.

ST. THOMAS. See SÃO THOMÉ.

ST. VINCENT. A British West Indian island; one of the Windward Island colonies. It occupies between 140 and 150 square miles, and had, in 1911, 41,877 inhabitants (estimate of March 31, 1912, 43,117; March 31, 1913, 44,434). Kingstown, a port of registry situated at the southwestern extremity of the island, had 4300 inhabitants in 1911. Other towns are Georgetown and Barrouallie. The island is of volcanic origin; the Soufrière was in eruption in March, 1903. Products for export are sugar, rum, cacao, arrow root, ground nuts, and spices. Imports and exports for the year 1912 were valued at £129,142 and £111,684 respectively. Revenue 1912–13, £38,088; expenditure, £33,993. Tonnage entered and cleared, 1912–13, 332,449, of which 298,925 tons British. Customs revenue, 1912–13, £18,311. The Administrator, in 1914, was C. Gideon Murray, appointed in 1909.

SAKHALIN. An island off the eastern coast of Siberia. The entire island was formerly Russian, but that part of it south of the 50th parallel was ceded to Japan by the treaty of Portsmouth, Sept. 5, 1905, and is called Karafuto. It has an area of 13,155 square miles, carrying an estimated population of 42,612 in 1913. Russian Sakhalin covers 16,370 square miles, with 12,000 inhabitants. There are valuable and extensive forests, but at present the fisheries are the most important source of wealth.

SAKURA-JIMA. See VOLCANOES.

SALEM, GREAT FIRE OF 1914. See MASSACHUSETTS, *Other Events.*

SALVADOR. A Central American republic, situated on the Pacific coast and bordering Guatemala and Honduras. Capital, San Salvador.

AREA AND POPULATION. Salvador is one of the most densely populated countries of America. Its estimated area is 21,160 square kilometers, and its estimated population (1913) upwards of 1,200,000. Although the people are largely mestizo and Indian, they have achieved a considerable degree of economic development and political stability. Town populations are not known with certainty. Estimates for San Salvador vary between 60,000 and 75,000. The population of Santa Ana has been estimated as high as 59,000; San Miguel is supposed to have about 25,000 inhabitants; Ahuachapán, San Vicente, and Chalchuapa, over 20,000 each; Zacatecoluca, about 20,000; Nueva San Salvador, about 19,000; Sonsonate, about 17,000.

EDUCATION. Primary instruction is free and nominally compulsory, but the majority of children do not attend school. The government, however, is directing its attention to education, establishing many new schools; the 1913 budget provided for 137 new schools, of which 60 were rural schools and 77 night schools. In 1913, there were in operation 856 schools, with an enrollment of 50,550 and an average attendance of 38,121. Of the schools, 711 were government schools, 91 municipal, 7 charity, and 47 private. In addition, there are 3 normal schools, 3 technical schools, 14 other schools of advanced rank, and a university.

PRODUCTION AND COMMERCE. The leading crop is coffee. Other agricultural products of importance are cacao, sugar cane, bananas, tobacco, rice, and indigo. There is also an output of rubber and balsam. Mining, especially that of gold and silver, is increasing in importance.

Imports, in 1912, were valued at $6,774,859, and exports, 22,341,987 pesos (silver); in 1913, imports, $6,173,545, and exports, 23,527,782 pesos. As the estimated value of the peso, in 1912, was 44.5 and in 1913, 42.2 cents, the exports had in these years gold values approximating $9,942,184 and $9,928,724 respectively. Import and export values, in thousands of dollars, are reported as follows:

	1909	*1910*	*1911*	*1912*	*1913*
Imports	4,177	3,745	5,114	6,775	6,174
Exports	6,361	7,298	9,439	9,942	9,929

Leading imports in 1912 and 1913 respectively, in thousands of dollars: cotton cloth and manufactures thereof, 2017 and 1477; hardware, 564 and 760; drugs and medicines, 419 and 478; machinery, 276 and 334; flour, 393 and 333; boots, shoes, and findings, 214 and 235; cotton yarn, 181 and 167.

Principal exports in 1912 and 1913 respectively, in thousands of dollars: coffee, clean, 7611 and 7810; coffee in parchment, 154 and 97; gold in bars, 608 and 581; gold and silver amalgams, concentrates, etc., 799 and 974; silver in bars, 148 and 22; panela, 78 and 94; sugar, 168 and 77; indigo, 95 and 56; cattle hides, 70 and 94. Trade by principal countries, in thousands of dollars:

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
United States	2,628	2,491	2,956	2,824
United Kingdom	1,905	1,604	445	706
Germany	665	714	2,295	1,700
France	397	418	1,510	2,030
Italy	288	225	941	1,208
Belgium	225	204	11	1
Total, including other	6,775	6,174	9,942	9,929

COMMUNICATIONS. The length of railway open to traffic, in 1912, is reported at 198 miles. A line from San Miguel to Usulután was opened to traffic in 1913, and one from San Salvador to La Libertad in 1914. Telegraph offices (1912), 203, with 3788 kilometers of line; post offices, 117.

FINANCE. The value of the peso fluctuates with the price of silver; in 1910, the peso was worth about 40 cents, in 1911 about 42.5 cents, in 1912 about 44.5 cents, and in 1913 about 42.2 cents. The budget for the year, 1914–15, showed estimated revenue of 14,896,850 pesos and estimated expenditures of 14,843,313 pesos. It was estimated that, of the revenue, 9,645,750 pesos would be derived from customs. Public debt, Jan. 1, 1913: foreign, 17,729,022 pesos; internal, 6,434,544; treasury bonds, 3,730,770; total, 27,897,337.

GOVERNMENT. The legislative power is vested by the constitution in the National Assembly, consisting of 42 members elected annually by direct vote. The President is elected by direct vote for four years. There is a Cabinet of four members. On March 1, 1911, Manuel Enrique Araujo was inaugurated President, succeeding Gen. Fernando Figueroa. President Araujo was assassinated in February, 1913, dying on the 9th of the month. He was succeeded by Carlos Meléndez. President Meléndez resigned in August, 1914, and was succeeded on the 29th of that month by Alfonso Quiñónez Molina.

By a new finance law inheritance taxes were imposed, ranging as high as 10 per cent on the inheritance of estates of over 100,000 pesos, by distantly related or unrelated heirs. See INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties.*

SALVARSAN. The undoubted improvement under salvarsan in cases of central nervous diseases which have a syphilitic basis led to attempts to introduce the drug into the cerebrospinal fluid. It had been found that intramuscular or intravenous injections were not nearly so effective. Neosalvarsan in aqueous solution was injected into the spinal canal by numerous clinicians. The results were dubious, and the patient suffered from extreme headache, vomiting, severe neuralgic pains, and a rise in temperature. Salvarsanized serum is serum drawn from an individual who has had an injection of salvarsan at a sufficient length of time before, to allow the development of antibodies. If the serum is drawn too soon after the salvarsan is given, more or less of the drug is still in the serum. Two or three days should elapse, according to Beriel and Durand, before drawing serum for therapeutic use. Salvarsanized serum had been used with excellent effect in locomotor ataxia and with less notable success in paresis, but patients having any nervous disease, which could be shown to be due to syphilis, were markedly benefited. In progressive paralysis Runge obtained remissions in 3.9 per cent of 380 cases in which no previous treatment had been taken, in 9.3 per cent of 140 cases treated with iodide alone, and 11.4 per cent of 35 cases treated with mercury alone. The amount of improvement seemed to be proportional to the dosage and to the promptness with which salvarsan treatment was administered. Salvarsanized serum had been injected into the spinal canal and into the cerebral ventricles. Deaths continued to be reported following the administration of both salvarsan and neosalvarsan, the latter drug being supposedly much safer than the former. Many of the fatalities occurred in young, vigorous subjects, without organic disease of any kind other than syphilis. The French school of physicians had always been somewhat antagonistic to the drug, and a prominent Berlin dermatologist, Dreuw, had also written an article presenting its dangers. From a review of the literature and communications with other dermatologists, he collected nearly 300 cases of death following salvarsan injection, together with a number of cases of blindness. Schmitt, on the other hand, analyzing 274 cases on record, found that in a large proportion of the instances there was no connection between the drug and fatalities. In others the dosage was excessive and the intervals between doses too brief.

SALVATION ARMY. There were in the Salvation Army, in 1914, 852 corps and outposts. There were held, during the year, 197,099 indoor meetings at which there was an attendance of 7,646,760 persons. In addition were held 150,055 open air meetings. The army maintains 92 hotels, accommodating 6896 persons, and also conducts 118 industrial homes, accommodating 3041 persons, to which were admitted, in 1914, 16,959 men. The slum work is carried on by 16 posts, and, in 1914, 29,225 families were visited and 80,639 persons temporarily assisted. There are 28 rescue and maternity homes, accommodating 839 persons, and 5 children's homes, accommodating 385 children. In connection with the prison work of the army, 1674 were assisted on discharge, during the year, and 229 situations were found on discharge of prisoners. The army took an active part in war relief, in the latter part of 1914, and accumulated great quantities of clothing which were sent to Europe. The army occupies 58 countries and colonies, and salvation is preached in 34 different languages.

SAMOS. One of the Anatolian islands; a more or less independent principality tributary to the Porte until November, 1912, since which date it has been administered by a Greek Governor—M. Sephoulis, the former leader of the Popular party in Samos against the Turks. Area, 468 square kilometers (181 square miles), with 53,424 inhabitants (1902), besides 15,000 natives of Samos residing on the Anatolian shore. Vathy, with about 8000 inhabitants, is the capital. Imports, 1911, 37,036,352 piasters; exports, 19,741,212 piasters. The chief exports are wine, raisins, leather, oil, cigarettes, spirits, and carobs. Estimated revenue, 1910, 3,651,660 piasters; expenditure, 3,627,496 piasters. Debt, 2,570,500 piasters.

SAN DIEGO EXPOSITION. See EXPOSITIONS.

SAN FRANCISCO. See MUNICIPAL OWNERSHIP.

SAN FRANCISCO EXPOSITION. See EXPOSITIONS.

SAN GIULIANO, MARQUIS DI. Italian statesman, died Oct. 16, 1914. He was born in Catania in 1852, of a Norman-Sicilian family. Early in life he entered politics and in 1892 was appointed under-secretary of state for agriculture, in the first Giolitti cabinet, in which post he shared the discredit which the Banca Romana scandal cast upon the members of the administration. In 1899 he attained cabinet rank as Minister of Posts and Telegraphs, in the second Pelloux cabinet. He had long cherished an ambition to be Minister of Foreign Affairs, a position for which he prepared himself by travel and study, and this ambition was finally achieved in December, 1905, when he was given the foreign portfolio in a cabinet formed by Signor Fortis. In the following year he was appointed foreign ambassador in London, a position which he held until 1910, when he became foreign minister in the Luzzatti cabinet, retaining this post in the succeeding Giolitti and Salandra administrations. His last notable act was the declaration of Italian neutrality at the beginning of the European War. In the last years of his life his activities were handicapped by persistent ill-health.

SANITATION. See GARBAGE AND REFUSE DISPOSAL; HYGIENE; SEWAGE PURIFICATION; TROPICAL DISEASES; and WATER PURIFICATION.

SANTO DOMINGO. See DOMINICAN REPUBLIC.

SÃO THOMÉ AND PRINCIPE. Two islands in the Atlantic off the coast of French Equatorial Africa, constituting a Portuguese dependency. Area, 939 square kilometers (374 square miles), carrying a population estimated, in 1909, at 68,221. The islands form one of the most important sources of the world's supply of cacao. The imports and exports for 1910 were valued at 3,197,830 and 9,896,000 milreis respectively. The 1910–11 budget estimated the revenue at 931,429 milreis, and the expenditure at 703,315 milreis. The colony is administered by a Governor.

SAPPHIRE. See GEMS AND PRECIOUS STONES.

SARATOGA SPRINGS. The board of commissioners of the New York State Reservation at Saratoga Springs issued promptly, on Jan.

Countries	*Population*	*Date of report*	*Form of organization*	*Number of depositors*	*Deposits*	*Average deposit account*	*Average deposit per inhabitant*
Austria	28,768,000	Dec. 31, 1911	Communal and private savings banks	4,385,064	$1,291,041,227	$294.42	$44.89
		Dec. 31, 1913	Postal savings banks, savings department	2,300,407	40,297,296	17.52	1.40
		Do.	Postal savings banks, check department	122,870	79,561,438	647.53	2.77
Belgium	7,579,000	Dec. 31, 1912	Government savings banks	3,013,296	204,147,391	67.75	26.94
		Do.	Communal and private savings banks	49,794	11,854,508	238.07	1.56
Bulgaria	4,338,000	Dec. 31, 1911	Postal savings banks	312,462	8,797,965	28.16	2.03
Chile	3,460,000	Dec. 31, 1912	Public savings banks	301,358	8,193,721	27.19	2.37
Denmark	2,800,000	Mar. 31, 1912	Communal and corporate savings banks	1,210,017	189,978,301	157.00	67.85
Egypt	11,626,000	Dec. 31, 1913	Government savings banks	282,401	3,176,757	11.25	.27
France	39,602,000	Dec. 31, 1912	Private savings banks	8,391,694	754,409,859	89.90	19.05
		Do.	Postal savings banks	6,187,208	336,898,799	54.45	8.51
Algeria	5,564,000	Dec. 31, 1909	Municipal savings banks	19,427	1,309,769	67.42	.24
Tunis	1,929,000	Dec. 31, 1912	Postal savings banks	5,546	1,504,448	271.27	.78
Germany	65,643,000	Do.	Public and corporate savings banks	22,979,254	4,445,888,574	193.47	67.73
Hungary	21,030,000	Dec. 31, 1909	Communal and private savings banks	1,149,251	428,028,064	372.44	20.35
		Dec. 31, 1912	Postal savings banks, savings department	836,148	21,983,784	26.29	1.05
		Do.	Postal savings banks, check department	24,104	22,027,751	913.86	1.05
Italy	35,239,000	June 30, 1913	Communal and corporate savings banks	2,399,606	490,191,840	204.28	13.91
		Dec. 31, 1912	Postal savings banks	5,780,010	376,072,448	65.06	10.67
Japanese Empire	70,689,000	Do.	Private savings banks	8,639,296	82,883,367	9.59	1.17
		Mar. 31, 1913	Postal savings banks	12,584,743	96,495,896	7.67	1.37
Luxemburg	268,000	Dec. 31, 1913	State savings bank	76,858	12,790,781	167.44	47.73
Netherlands	6,022,000	Dec. 31, 1911	Private savings banks	470,333	47,811,870	101.66	7.94
		Dec. 31, 1912	Postal savings banks	1,607,016	71,016,038	44.19	11.79
Dutch East Indies	37,957,000	Dec. 31, 1910	Private savings banks	13,228	2,887,566	218.29	.08
		Dec. 31, 1912	Postal savings banks	102,486	3,789,750	36.98	.10
Dutch Guiana	86,000	Do.	do.	10,649	353,658	33.21	4.11
Norway	2,436,000	Do.	Communal and private savings banks	1,078,704	152,065,286	140.97	62.42
Rumania	6.866,000	July 1, 1910	Government savings banks	218,690	11,616,820	53.12	1.69
Russia	167,920,000	Dec. 31, 1913	State, including postal savings banks	8,988,225	867,929,500	96.56	5.17
Finland	3,140,000	Dec. 31, 1911	Private savings banks	308,938	48,431,375	156.77	15.43
		Do.	Postal savings banks	66,002	1,530,985	23.20	.46
Spain	19,944,000	Dec. 31, 1912	Private savings banks	573,349	55,943,487	97.57	2.81
Sweden	5,604,000	Do.	Communal and trustee savings banks	1,664,168	242,335,228	145.62	43.24
		Dec. 31, 1913	Postal savings banks	575,700	12,885,976	22.38	2.30
Switzerland	3,555,000	Dec. 31, 1908	Communal and private savings banks	1,963,417	307,386,481	156.56	86.47
United Kingdom	45,663,000	Nov. 20, 1912	Trustee savings banks	1,870,510	261,875,606	140.00	5.73
		Dec. 31, 1912	Postal savings banks	12,750,698	886,211,861	69.50	19.41
British India	244,221,000	Mar. 31, 1912	do.	1,500,884	61,318,176	40.85	.25
Australia, Commonwealth	4,894,000	Mar. 31, 1914	Com'wealth, State, trustee, & joint-stock savings banks	2,103,906	397,009,678	188.70	81.12
New Zealand	1,053,000	Dec. 31, 1912	Postal savings banks	432,199	79,471,196	183.88	75.47
		Mar. 31, 1913	Private savings banks	71,728	8,337,692	116.24	7.92
Canada	7,758,000	June 30, 1913	Postal savings banks	145,396	41,885,255	288.08	5.40
		Do.	Dominion Government savings banks	34,309	14,140,754	412.16	1.82
British South Africa	7,086,000	1911–12	Government, post office, and private savings banks	262,920	29,938,226	113.87	4.22
British West Indies	1,736,000	1912–13	Government and post office savings banks	92,983	6,522,284	70.14	3.76
British colonies, n. e. s.	25,506,000	1912–13	do.	246,317	14,377,352	58.37	.56
Total, foreign countries	889,927,000			118,202,994	12,534,585,864	106.04	14.08
United States	100,102,000	June 30, 1914	Postal savings banks	388,511	40,919,678	105.32	......
		do.	Mutual and stock savings banks	11,109,499	4,936,591,849	444.36	49.36
Philippine Islands	8,643,000	do.	Postal savings banks	45,518	1,416,912	31.13	.16
Grand total	998,672,000			129,746,522	17,513,463,798	......	......

1, 1915, their report for the preceding year. They show great progress in the preparation of parks for use of invalids, with walks and climbs for the Oertel exercises; in the construction of the Pine Promenade, a mile in length, for pedestrians and wheel chairs; the creation of zones of safety about some spring areas; of the control and proper administration of hydrotherapeutic measures in the village; the erection and equipment of a laboratory for water analysis, chemical and bacteriological; a consolidated bottling works wherein five mineral waters are bottled with natural gas in solution; many repeated analyses of mineral waters, some showing a steady increase in medicinal ingredients; and especially the equipment of the Lincoln Bath House, to be prepared by May 1, 1915, for the exhibition of 325 daily treatments during the usual bathing hours, comprising Nauheim baths, colon irrigations, Baruch's neuro-vascular training, massage, etc. The State hopes to acquire, in January, the private bath house known as Saratoga Baths, wherein, after renovation and installation of new equipment, 250 treatments a day may be given, under competent direction. The Congress Spring has been reclaimed and will be added to the list of bottled waters, now comprising the Hathorn No. 1, Hathorn No. 2, Coesa (formerly Carlsbad), Orenda (formerly Adams), Minnonebe, and Geyser springs. Dr. Albert Warren Ferris continues to be the director, Prof. Charles G. Anthony is the engineer, Herbert Ant is the chemist, Louis W. Noland is secretary to the commissioners, who are Hon. George Foster Peabody, Gen. Benjamin F. Tracy, and Hon. Frank N. Godfrey, and serve without remuneration. See Hydrotherapy.

SARAWAK. The northwestern portion of the Island of Borneo; a British protectorate. Area, about 42,000 square miles, with an estimated population of 500,000. Kuching, with 25,000 inhabitants, is the capital. Sibu has a large Chinese population, mostly traders, and the Rejang River has a raft population of some 90,000. Total imports and exports amounted, in 1911, to S.S.$8,572,624 and S.S.$9,563,485 respectively. The revenue for 1911 was given at S.S.$1,420,420, and the expenditure at S.S.$1,341,761. The acting Rajah is Charles Vyner Brooke.

SASKATCHEWAN. A province of the Dominion of Canada. Area, 251,700 square miles, with a population (1911) of 492,432. The capital is Regina, with (1912) 30,213 inhabitants. The population has increased enormously since the census was taken. The province is administered by a Lieutenant-Governor, appointed by the Governor-General of Canada, and acting through a responsible executive council. There is a unicameral legislative assembly of 41 elective members. The Lieutenant-Governor, in 1914, was George William Brown, appointed Oct. 5, 1910. Premier, in 1914, Walter Scott. See Canada.

SAULTE STE. MARIE CANAL. See Canals.

SAVINGS BANKS. In the United States commercial savings banks are of two classes, mutual and stock. (See, for postal savings, the article on Postal Savings Banks.) The former are found more frequently in New England and the Eastern States, while the latter prevail through the Middle West. On June 30, 1914, there was a total of 2100 savings banks in the United States of which 634 were mutual and 1466 stock. Their aggregate deposits were $4,936,591,000, credited to 11,109,499 depositors, or $444.36 per depositor. There was an increase during the year of $109,188,000 in deposits, and of 343,000 in the number of depositors. New England States were credited with 3,653,000 depositors and $1,543,121,000 deposits; Eastern States, 4,422,000 depositors, and $2,253,737,000 deposits; Southern States, 430,687 depositors, and $97,600,000 deposits; Middle Western States, 1,533,780 depositors, and $529,698,000 deposits; Western States, 56,816 depositors, and $11,926,000 deposits; Pacific States, 1,012,652 depositors, and $500,507,000 deposits. New York had nearly 30 per cent of the depositors and more than one-third of the deposits; Massachusetts ranked second with one-fifth of the depositors and 18 per cent of the deposits. Other States ranking high were Connecticut, Pennsylvania, Michigan, Ohio, and California. The growth of savings banks in the United States is sufficiently indicated by the fact that they more than doubled in number since 1902; depositors in that time increased 67 per cent; and deposits nearly doubled.

Mutual savings banks, though less numerous, are much more important in the aggregate than the stock savings banks. On June 30 they held $3,915,626,000 deposits, credited to 8,277,359 depositors. They thus held four-fifths of all savings bank deposits and had three-fourths of all depositors. They are distributed as follows: New England States, 412; Eastern States, 199; West Virginia, 1; Middle Western States, 21; and California, 1.

The stock savings banks had 2,228,020 savings depositors and 604,120 commercial accounts. They held $752,785,000 savings deposits; and $268,178,000 other deposits.

The table on page 627, compiled by the Bureau of Foreign and Domestic Commerce from office reports, gives the latest statistics for savings banks of the world, including postal savings banks:

Savings Bank Insurance. The annual report of the State actuary of Massachusetts showed that the four savings banks of that State issuing insurance policies had, in the year ending October 31, issued 2408 policies representing $783,962 insurance. During the year there was a net gain of 1385 policies, and $415,972 insurance. The total number of policies in force was 9439, amounting to $3,566,000. The total premium income for the year was $139,753; interest income, $20,563. Disbursements included $9706 in death claims, $12,422 in dividends, and $12,826 in surrender values. Very large dividends were paid to policy holders, amounting in some cases to as much as 67½ per cent of the year's premium. See also Postal Savings Banks.

SAVING BANKS, Postal. See Postal Savings Banks.

SAXONY. See Germany.

SCABIES. See Veterinary Medicine.

SCADDING, Charles. An American Protestant Episcopal Bishop of Oregon, died May 27, 1914. He was born in Toronto, Canada, in 1861, and graduated from Trinity College, Toronto, in 1885. From 1886 to 1890 he was assistant pastor of St. George's Church, N. Y., and in 1891 was rector of Christ Church, Middletown, N. Y. He was consecrated Bishop of

Oregon in 1906. He was lecturer for the London Society for the Propagation of the Gospel and wrote several books and many tracts.

SCANDINAVIAN LITERATURE.* DANISH. *Drama.* The drama of to-day seems to have for its purpose not so much to present anything new, as to present in new light facts already known. The theatre has become a battle field for the conflict of ideas and the defense of certain theories. Thus in Julius Magnussen's *Skyldig eller ikke skyldig* ('Guilty or not Guilty') the author tries to force on us the conviction that the troubles of the hero schoolboy are due, not to himself, but to the teachers and the school. P. C. V. Hansen's *Hyttefadet* ('The Fishtrunk') shows the effects of social elevation on a socialist leader and his political views. *Dora van Deken*, a dramatization of Henrik Pontoppidan's story, *Lille Rødhætte* ('Little Red Riding Hood'), shows us the fight of the heroine against society at large in behalf of her child. In the play, *I Rungsted Kro* ('In the Tavern of Rungsted'), Olaf Hansen shows a wonderful familiarity with the disappointments and sorrows incident to the poet's life. The play treats of the life of Johannes Ewald and is written in verse.

Fiction. In Knud Hjortø's *Fru Herta* ('Lady Herta') we see a romantic situation translated into realism—it is the eternal conflict between the light and the dark. The heroine marries a man of lower social rank than herself, but we are made to see the influence of his optimistic, conquering nature on her. This book makes easy reading, which is more than can generally be said of this author's work. In *Lykkens Veje* ('The Paths of Happiness') Poul Levin gives us a sketch of Copenhagen life executed with a firm and steady hand. Gustav Wied's *Imellem Slagene* ('Between the Battles') consists of little sketches and comedies, and also of a larger work in the form of a diary relating the romance of a wine dealer who has "loved and lost." In Svend Leopold's *Onkring Parnasset og andre Materier* ('Around Parnassus and Other Subjects') the best is a sketch of the duchy of Braunschweig called *Det Lille Rige* ('The Small Country').

NORWEGIAN. *Poetry.* Olaf Bull's *Nye Digte* ('New Poems'), which remind one of Wergeland, show a wonderful poetic imagination. Bull has the power of creating, back of the things he treats, a mystic fable world of his own.

Drama. Sigurd Ibsen, the son of the late Henrik Ibsen, has departed once from his regular form of writing, the essay, and has tried his hand at a tragedy, *Robert Frank.* It depicts the defeat and death of a man of political ambitions, whose fall is brought about by his love. The moral of the play seems to be that defeat of some sort is nearly always the price of greatness.

Jubilee Literature. The year 1914 was the 100th anniversary of the liberation of Norway from Danish rule and its union with Sweden as an independent kingdom. Hence there has been a great deal of jubilee literature throughout the country. The main production of this kind is the official publication, *Eidsvoll 1814* (place and date of the adoption of the constitution). It appeared in twenty volumes, both in Dano-Norwegian and in the Landsmaal (see *Landsmaal N. Q. E.* vol. ii). *Norges storting 1814–1914* (15 vols.) describes the origin and development of the *Storting* through the century and contains about 300 biographies. Angell's *Syvaarskrigen* ('The Seven Years of War') describes the war preceding the liberation. A splendid work in its line is Erik Vullum's *Hvorledes Norge blev frit* ('How Norway Became Free') which presents the events of the time in their relation to general European history. A collection of monographs and dissertations from the historical *seminar*, edited by Halvdan Koht, show a great deal of care and scholarship in their preparation.

Literary Criticism. Throughout the three Scandinavian countries a growing interest in literary criticism, indigenous and foreign, has of late years manifested itself in Norway by the launching this year of the new periodical, *Edda*, which has as contributors some of the greatest scholars in and outside of Scandinavia, and which deals with widely different literatures.

SWEDISH. The idealistic trend which has existed for the last few years in Swedish literature has not subsided much during the year, as is attested by the fact that Selma Lagerlöf was elected as one of the 18 immortals of the Swedish Academy—the first woman to receive this distinction.

Drama. In the comedy, *Janssons frestelse* ('The Temptation of Jansson'), by the popular actor, Sigurd Wallen, we have a very creditable attempt at putting real peasants on the stage. Arnold Munthe made his début with a play, sketching, in four acts, the last four unhappy years of Magnus Stenbock. This play is a proof not only of good dramatic technique but also of deep historical insight.

Fiction. In Gustaf Hellström's *Kring en Kvinna* ('Around a Woman') we see how a woman of quite ordinary character influences profoundly the lives and fates of the men surrounding her, driving some of them even to insanity and suicide. Algot Ruthe's *De två nationerna* ('The Two Nations') is a novel treating social problems, particularly the labor question and Socialism, and giving the author's own impressions from the battlefield of the latter. Interwoven with the development of the ideas in the book is a little love story which, in its way, throws light on the problems. Erik Fahlman's *Firman Åbergson* ('The Åbergson Co.'), the first production of the author, is a work of sound and rugged realism, reproducing and interpreting a section of middle-class life. Sigfried Siewertz has given us a volume of short stories, *Ämbetsmän på äfventye* ('Officials on Adventures'), which is idyllic throughout, and which still shows the author's interest in the psychologic situation. Other collections of short stories are Ture Janson's *Knock me down*, tales from Helsingfor's life, written by a Finlander, and *Äventyrens land* ('The Land of Adventures') by Marika Stjernstedt.

Miscellaneous. *Gudstrons Uppkomst* ('The Origin of a Belief in a God'), by Nathan Söderblom, traces the religious element in man. A new edition of Runeberg's *Fäurik Ståls Sägner* ('The Tales of Ensign Stål'), edited by Ruben Berg and Ivar Hjertén, constitute an important contribution to Runeberg criticism.

SCARBOROUGH, JOHN. An American

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* On account of the interruptions of intercourse with Europe during the war, this article is of necessity incomplete.

Bishop of the Protestant Episcopal Church, died March 14, 1914. He was born in Castlewelian, Ireland, in 1831. At an early age he removed to the United States and settled in New York where he was prepared for Trinity College, Hartford; upon graduating from this institution in 1854 he entered the General Theological Seminary in New York City, graduating in 1857, and later receiving the degree of S.T.D. from Trinity College. In the following year he became assistant at St. Paul's Church, Troy, N. Y., and two years later was made rector of the Church of the Holy Comforter at Poughkeepsie, serving there for seven years. He was then appointed a rector of Trinity Church, Pittsburgh, and there he served until his ordination as Bishop of New Jersey, Feb. 2, 1875. He was fourth in seniority among the Protestant Episcopal bishops in the United States.

SCARLESITE. See MINERALOGY.

SCHOOL ADMINISTRATION. See EDUCATION IN THE UNITED STATES.

SCHOOL BUILDINGS. See ARCHITECTURE.

SCHOOLS. For facts concerning elementary and secondary schools, see EDUCATION IN THE UNITED STATES; for professional and technical schools, see UNIVERSITIES AND COLLEGES and AGRICULTURAL EDUCATION. For rural schools, see HYGIENE.

SCHUCH, ERNST VON. A German operatic conductor, died May 10, 1914. He was born in Graz in 1847, and studied at the gymnasium of that city, then attended the university with the purpose of practicing law, but soon returned to the study of music and acted as conductor in Breslau, Würzburg, and other cities. For a time he traveled as conductor of the company of Désirée Artôt, and after her retirement he became conductor at the Dresden Opera House, which he raised to a higher artistic level than any other opera house in Germany. He conducted the first appearance of Marcella Sembrich and Ernestine Schumann-Heink at this opera house. In 1898 he visited the United States and directed several concerts at the Metropolitan Opera House. He was selected by Ignace Paderewski to conduct his *Manru* for the first time in Germany, and he also conducted the first performances of Strauss' *Salome, Elektra*, and *Der Rosenkavalier*. He retired from the direction of the Royal Opera House in Dresden several months before his death, being at the time of his retirement the most famous operatic conductor in Europe.

SCHUYLER, MONTGOMERY. An American art critic and journalist, died July 16, 1914. He was born in Ithaca, N. Y., in 1843, and entered Hobart College in 1858, but did not graduate. In the Civil War period he removed to New York City and almost immediately entered upon the work in which he afterwards became distinguished. In 1868 he joined the staff of the New York *World* and at once attracted attention in literary circles by his forceful, thoughtful, and scholarly articles. Drawn by his artistic and musical tastes to specialize along these lines, he became known as one of the great architectural critics, and after the death of Russell Sturgis was acknowledged to be the leading architectural critic in the United States. In 1883 he left the *World* and joined the editorial staff of the *Times*, remaining there until 1907, when he retired from active newspaper work and removed to New Rochelle. From 1885 to 1887 he was managing editor of *Harper's Weekly* and from the latter year until 1894 continued to be a reader for Harper & Bros. In 1912 he joined the staff of the New York *Sun* as a special writer on books. From 1907 until his death he was at work on a *History of Architecture in the United States*, a monumental work, which unfortunately he left unfinished. He was a member of the National Institute of Arts and Letters and many other societies and organizations. He wrote poems and critical papers for many magazines, and in 1892 he published *Studies in American Architecture*, and in 1906, *Westward—The Course of Empire;* he was also author of *The Brooklyn Bridge* with W. C. Conant.

SCOTLAND. See GREAT BRITAIN.

SCULPTURE. See PAINTING AND SCULPTURE.

SCURVY. See BERIBERI.

SEALS. See FISH AND FISHERIES.

SEAPLANE. See AËRONAUTICS.

SEARCHLIGHT. See ELECTRIC LIGHTING.

SEDOFF EXPEDITION. See POLAR RESEARCH, *Arctic*.

SEINE, PROTECTION OF. See FLOOD PREVENTION.

SEISMOLOGY. See EARTHQUAKES.

SELANGOR. A State of the Federated Malay States protectorate (q.v.), on the western shore of the Malay Peninsula. It has a coast line of about 125 miles. It is watered by the Bernam, the Selangor, the Klang, and the Langat rivers. The inhabitants are said to be descended from Celebes colonists. Coffee cultivation, formerly a prominent industry, has greatly declined. The cultivation of rubber has greatly developed, the area alienated in 1912 for this object being 313,142 acres, of which 170,843 acres were immediately planted. The rubber exported during 1912 was valued at S.S.$33,023,110. There are 30,308 acres planted to coconuts; and rice, gambier, pepper, etc. are grown. Tin mining is the principal industry, the area alienated for mining being 73,734 acres; 68,000 Chinese are employed in the mines. The 1912 tin export was 255,382 piculs, valued at S.S.$26,394,751. There are 656 miles of metaled and 64 of graveled roads, besides 174 miles of bypaths. Kuala Lumpur, with 46,718 inhabitants, the capital of the State and headquarters for the protectorate administration, is the largest town on the mainland of the peninsula. It has public gardens, containing about 180 acres, and imposing government buildings. Port Swettenham is the chief port. Import duties are levied on opium and spirits. Aggregate tonnage registered in 1912, excluding native craft, 2,902,677. The native ruler is Sir Ala'idin Suleiman bin Almerhum Raja Musa. The British Resident in 1914 was E. G. Brodrick.

SENATORS, DIRECT ELECTION OF. See ELECTORAL REFORM.

SENEGAL. One of the colonies composing the French West Africa government-general. The capital is Saint-Louis. The area as given in the *Annuaire Statistique* differs somewhat from that reported by the Colonial Office publications (for the latter see FRENCH WEST AFRICA), being 192,000 square kilometers. The population differs also, the *Annuaire* reporting 1,247,979—888,467 Mohammedans, and 346,333 fetichists, the remainder being European Christians. The population of the principal towns is given by the same publication: Dakar, 25,630 (2397 French); Saint-Louis, 22,276 (896); Rufisque, 12,490 (311); Tivavouane, 3443 (96); Thiès, 2397 (129); Louga 1806 (84); Gorée, 1140 (45).

A primitive agriculture is the main industry, and tropical fruits and plants are grown. The chief products for export are ground nuts, gums, rubber, palm kernels, wax, etc. Grazing is practiced, and large herds of cattle, sheep and goats, camels, and horses are owned by the nomad tribes. The total imports, for the year 1912, were valued at 67,859,907 francs—cotton textiles, 9,539,713 francs; rice, 4,951,476; kola nuts, 3,384,892; sugar, 3,035,022; guinea (blue cotton cloth), 2,796,231; wine, 1,672,326; comestible oils, 1,459,143; leaf tobacco, 1,294,167; wheat flour, 1,251,615; alcohol and brandy, 1,235,534; construction material, 1,232,860; sea biscuit, 1,078,422; coal, 9,457,802. The total exports were valued at 56,019,804 francs—ground nuts, 41,161,966; gums, 2,315,494; rubber, 1,077,011; palm kernels, 705,514; cattle, 263,500 (2108 head). The production of ground nuts, the main article of export, exceeded, in 1912, by 20,000 tons, that of 1911. The Dakar-Saint-Louis Railway has a development of 264½ kilometers, nearly all in the Cayor region. Since the pacification of Cayor, this region has become the principal field for ground-nut cultivation. A line, whose ultimate destination is Kayes, is in operation from Thiès to Guinguinéo. Construction as far as Koulougadougou was to be completed by the end of 1914. Vessels entered in the 1911 trade, 943, of 2,009,078 tons; cleared, 950, of 2,004,087 tons. See FRENCH WEST AFRICA.

SERUM THERAPY. Bodenheimer treated a severe case of purpura hemorrhagica with horse serum with a successful result. Ten cc. of serum were administered intramuscularly. In addition, calcium lactate, gelatin, and orange juice were given by mouth. The gangrenous hemorrhagic blisters healed within 48 hours. The action of the serum in this respect resembles that of antitoxin on a diphtheritic membrane. Another dose of the serum sufficed to stop epistaxis and bleeding from the bowel. A discovery by Marie and Leri of certain peculiarities in the serum from subjects of cerebral hemorrhage, makes it probable that another method of diagnosis of internal hemorrhage may be possible. The investigators noticed that certain serums were greenish and more or less fluorescent, and found in each case that the serum came from a patient with cerebral or meningeal hemorrhage. In three other patients with symptoms suggesting cerebral hemorrhage, there was no greenish tint to the serum, as also with serum from a hundred patients without hemorrhage. It was noted, in some cases, on the day the hemorrhage occurred, and it persisted in some up to the fifth or seventh day. This chromoserodiagnosis may apply to internal hemorrhage at any point. See ANTITOXIN.

SERVIA. One of the Balkan States; a constitutional monarchy of southern Europe—previous to 1878 an autonomous Turkish dependency. Capital, Belgrade.

AREA AND POPULATION. In the following table the area of Servia, previous to the wars in the Balkans, is given by departments, with the population returned by the census of Dec. 31, 1910:

Depts.	*Sq. km.*	*1910*
Belgrade *	12	89,876
Belgrade	2,025	155,815
Kragujevac	2,295	189,025
Krajina	2,909	112,142
Krushevats	2,710	167,871
Morava	2,900	208,688
Nish	2,558	198,768
Ushitse	3,283	146,763
Pirot	2,419	112,814
Podrinje	3,351	238,275
Pozharevats	4,157	259,906
Rudnik	1,569	85,840
Smederivo	1,277	148,216
Chachak	3,798	133,911
Timok	3,196	149,588
Toplitsa	2,889	110,218
Valjevo	2,458	157,648
Vranja	4,842	252,987
Total	48,303	2,911,701

* City.

By the terms of the treaty of Bucharest (July 25, 1913), Servia gained, as the result of the wars in the Balkans, the eastern part of Novibazar, Kossovo, and central Macedonia. The new territories have an area estimated at 39,000 square kilometers, and are composed of the following territories: Bitolj, with 345,759 inhabitants; Ishtib, unknown; Debar, 82,476; Kavadar, 97,763; Kumanovo, 166,939; Novibazar, 133,401; Plevlye, 62,601; Prishtina, 239,386; Prizren, 227,425; Skoplje (Usküb), 153,293; Tetovo, 157,249. The Greco-Servian frontier has been agreed upon between the two governments, but no protocol defining it had been published in 1914. The Serbo-Montenegrin frontier has been defined.

Of the total population in 1910, 2,528,819 were rural and 382,882 urban. Servian subjects numbered 2,890,602, and of the 21,086 foreigners, 5518 were Hungarians, 6060 Turks, and 6605 Austrians. Servian subjects, speaking Servian, numbered 2,778,706; Servian and Rumanian, 32,556; German, 7494; Albanian, 2151; Hungarian, 1956, etc. Engaged in agriculture were 2,093,947; in other primary production, 6640; in the industries, 166,599; in commerce, 109,998; and in public offices or the professions, 116,566. There were 13,289 marriages in 1912, 114,257 births, and 63,356 deaths. The principal towns, with their population in 1911, are Belgrade, 90,890; Nish, 24,949; Kragujevac, 18,452; Lescovats, 14,266; Pozharevats, 13,411; Vranja, 11,439; Pirot, 10,737. Bitolj (Monastir) had, in 1910, a population of 59,856; Skoplje (Usküb), 47,384; Prilip (Perlepe), 21,783; Prizren, 21,244; Prishtina, 18,174.

Primary education is free, State-aided, and nominally compulsory, but attendance does not exceed 25 per cent of the school population. Special schools are few.

PRODUCTION. Servia is essentially an agricultural country, and stock raising is the most important occupation of the people. Of the total area (1904), 1,865,392 hectares were under cultivation, and 1,546,000 under forests. Cereals, plums in large quantities, and vines are grown. No returns for area and production of main crops are available since the wars in the Balkans. There were 965,208 cattle in the country, Dec. 31, 1910, 3,808,815 sheep, 152,617 horses, 836,544 swine, and 627,427 goats. The mineral resources include coal and lignite, copper ore, and gold. The manufactures include milling, brewing, distilling, sugar refining, carpet weaving, and meat packing.

COMMERCE, ETC. No trade statistics are available later than 1911, in which year the imports were valued at 115,425,000 dinars, and the exports at 116,916,000 dinars. The principal articles by great classes, in the 1911 trade, are given below, in thousands of dinars:

	Imports	*Exports*
Agricultural products	22,769	108,776
Metals	20,804	9,657
Minerals	6,986	718
Drugs, etc.	7,578	288
Textiles, etc.	31,416	2,148
Hides, etc.	4,575	87
Luxuries	2,809	66
Paper	2,518	28
Stone, etc.	1,619	182
Glassware	1,520	....
Machinery	12,850	28
Other merchandise	1,041	48
Total 1911	115,425	116,916
Total 1910	84,697	98,888
Total 1909	75,585	92,982

By countries of origin and destination, the trade for 1911 is given below, in thousands of dinars:

	Imps.	*Exps.*		*Imps.*	*Exps.*
Austria .	47,448	48,488	Italy	4,861	4,894
Bosnia ..	220	112	Switz. ..	1,552	258
Bulgaria .	697	2,802	France ..	5,746	8,841
Turkey ..	8,814	11,984	Belgium..	2,081	6,142
Greece ..	325	110	U. K. ..	9,524	87
Rumania.	1,589	6,141	America..	2,186	8,609
Russia ..	3891	58	Other ...	748	17
Germany.	31,347	28,988			
			Total	.115,425	116,916

COMMUNICATIONS. The navigable rivers are the Save, the Danube, and the Drina. At the end of 1913 there were in operation 555 kilometers of standard and 414 of narrow gauge railway; in the acquired territory, 387 kilometers of standard gauge, 111 local line, and 105 industrial line. There were under construction 344 kilometers. Telegraph lines in 1912, 4403 kilometers, with 8355 kilometers of wires; State telegraph stations, 211. Post offices, 1556.

ARMY. The Servian army, which, prior to the annexation crisis of 1908–09, was a militia of indifferent quality, made enormous progress in organization and training, and in the two Balkan Wars rendered a good account of itself, going through these struggles with a reputation for military efficiency and fighting form; and its strength in numbers, training, armament, organization, leadership, and readiness for conflict made it a serious consideration in any great struggle in which it might be involved. The army was organized on a basis of compulsory service, and its war strength in 1914 was estimated in round numbers by a competent German authority at 230,000 men, which with the addition of the landsturm could be augmented to a possible 400,000 men in the field. The Servian army was made up of three classes, the regular army, the reserves, and the landsturm, the two former making up the field army, while the landsturm was used only for national defense. Before the annexation of Turkish territory the field army consisted of five divisions of 200,000 men ready for war, the divisions being located as follows: First division at Nish; second division at Valjevo; third division at Belgrade; fourth division at Kragujevac; fifth division at Zaječar. The new territory involved the organization of five new divisions of cadres, which were duly formed. These new divisions were located as follows: Sixth division at Novibazar; seventh division at Prishtina; eighth division at Usküb; ninth division at Ishtib; tenth division at Monastir; and one cavalry division.

In peace the reserve division had no cadres, but it was shown in the Balkan War that these men could be made fit for service with remarkable rapidity. The Servian infantry is armed with a 7-millimeter repeating Mauser rifle. The ammunition pouches carry 170 pounds, and 30 rounds more per man are carried by draft animals, and 100 rounds in the division ammunition park. The artillery of the field army has Schneider-Cruesot and modern quick-firing guns, while the landsturm has the old De Bange guns of the 85 type.

FINANCE AND GOVERNMENT. The dinar, worth 19.295 cents, is the monetary unit. No official statistics for revenue and expenditure are at present available. The budget for 1913 was reported to balance at 130,764,713 dinars. The debt stood Jan. 1, 1913, at 654,050,500 dinars.

The King is the executive, acting through a council of eight responsible ministers. The legislative power resides in the unicameral national assembly (Narodna-Skupshtina) of 160 deputies popularly elected. Reigning monarch, Peter I (Kara-Georgevitch), born 1844, elected to the throne June 15, 1903. Heir-apparent, Prince Alexander, born 1888. The ministry, constituted Sept. 12, 1912, and Sept. 1, 1913, was composed as follows: N. P. Pashitch, Premier and Minister for Foreign Affairs; Dr. L. Patchou, finance; S. M. Protitch, interior; Col. D. Stefanovitch, war; L. Yovanovitch, public instruction; M. Diouritchitch, justice; Dr. V. Yankovitch, commerce, etc.; I. P. Ivanovitch, public works.

HISTORY. In January Col. Dushan Stefanovitch, formerly military attaché at Bucharest, was brought into the cabinet of which Nicholas Pashitch was Premier. When the Servian Parliament was reopened after the Easter recess a bitter controversy arose regarding the relations between the military and the civil power, resulting in the resignation of the Minister of War, the pensioning of two generals (one of whom was the leader of the conspiracy of 1903), and the appointment of a commission to investigate the Officers' Coöperative Society. This unfortunate quarrel was the consequence of the fresh prestige and the intolerable arrogance with which the military clique emerged from the second Balkan War. The rancorous dispute as to whether military or civil authorities should take precedence was seized upon by the Opposition in Parliament as an excuse for moving a resolution of no confidence in the government, but the Opposition could muster only 50 votes against the 77 ministerial supporters. Feeling continued to run high, however, and on May 20 the sitting almost degenerated into a riot. On the following day the Opposition deputies quit the house in a body, and continued to absent themselves; while the remainder of the house busied itself with several important projects—among them a credit of $24,500,000 for military expenditure, to be spread over the three years 1914–15–16. Finally, however, the combined opposition of the Progressive, Nationalist, and Samostalni groups succeeded in overthrowing the Pashitch ministry. The combined Opposition was not closely enough united to support a ministry from its own side of the house and as a result the King recalled Nicholas Pashitch. Returning again to power, M. Pashitch arrived at a tactful solution of the dispute between military and civil authorities. In June he announced a dissolution of Parliament and called new elections for August 14. The new Parliament was to have assembled on September 23. On June 24 the aged King Peter was forced by ill-health temporarily to resign the government into the hands of Crown Prince Alexander as Regent; and while King Peter was enjoying the mineral baths at Vrania, many journals were predicting his speedy abdication. But very soon the press was furnished with a more substantial topic for discussion. The murder of the Austrian heir-apparent at Sarajevo, the imputation of Servian complicity in the crime, the Austro-Hungarian ultimatum to Servia, and the declaration of war on July 28, led swiftly to the awful catastrophe of a general European war. These events, and the part which Servia played in the war, will be found fully described in the article on the WAR OF THE NATIONS. The removal of the Servian capital at the beginning of the war from beleaguered Belgrade to Nish, and the British loan of $4,000,000 to Servia without interest until the end of the war, may be mentioned here because of their importance in the internal history of Servia. Some attention is also due to the concordat which was signed in June by the Servian ambassador in Paris and Cardinal Merry del Val, papal Secretary of State, whereby the Austrian protectorate over the Catholics in Servia was ended, and an Archbishop of Belgrade was entrusted with the protection of Roman Catholic interests in Servia, while a bishop with his see at Skolpje was given jurisdiction over New Servia. When it is remembered that Austria-Hungary, and especially the Archduke Francis Ferdinand, had for many years regarded the Hapsburg monarchy as the defender and champion of Catholicism against the Orthodox States of southeastern Europe, the significance of the concordat becomes clearer. One other occurrence remains to be noted: the resignation of M. Pashitch late in November and his second reinstatement as Premier. See also the articles on GREECE and TURKEY.

SEVENTH DAY ADVENTISTS. See ADVENTISTS, SEVENTH DAY.

SEVENTH DAY GERMAN BRETHREN. See BRETHREN, CHURCH OF THE.

SEWAGE PURIFICATION. Imhoff or Emscher settling tanks (really an improved two-story type of settling tank), combined with sprinkling or percolating filters where further treatment is necessary, continued to be the most generally accepted method of sewage treatment. Where still more treatment is demanded the sprinkling filter affluent may be either applied to intermittent sand filters or disinfected with hypochlorite of lime (bleaching powder) or with liquid chlorine (compressed chlorine gas). In Germany fine screening was widely used for partial clarification. It was projected for several American cities in 1914. The indications were that future fine screening was to be adopted by a number of American cities where a large volume of diluting water was available and offense to the eye was to be avoided and dangers to bathing beaches or water-supplies lessened. Where the full protection of public water-supplies is sought reliance must be placed on water purification, even if sewage treatment is practiced.

Scores of sewage purification works were built or put under construction during the year, widely distributed over the whole North American continent. The third and final installment of Imhoff tanks and sprinkling filters was completed for Atlanta, Ga.; the construction of a large number of Imhoff tanks to extend the sewage works of Baltimore was begun; plans were about completed and some construction work started for three plants to treat the sewage of Cleveland, Ohio, and there was much other sewage-works activity in Ohio. A large experimental sewage-treatment plant was being operated at Brooklyn, N. Y., small ones at Erie, Pa., and Indianapolis, and Milwaukee also installed an experimental plant. The final report of the Metropolitan Sewage Commission of New York, containing recommendations much as outlined in the 1913 YEAR BOOK, was published early in 1914, and the records and projected plans of the commission were turned over to a committee of the Board of Estimate and to the borough consulting engineers for further study.

Early in the year many data, gathered by sanitary experts from both countries, on the pollution of the boundary waters of the United States and Canada were published by the International Joint Commission. Later in the year these and other sanitary experts submitted a tentative report interpreting the bearing of the data on the sewage disposal and water purification problems of the cities of the Great Lakes. As regards sewage disposal the experts stated that in waters where some pollution is unavoidable, sewage disposal by dilution is permissible, if nuisance is prevented, and if no undue burden is placed on water-purification plants (see WATER PURIFICATION). The method of sewage treatment should be varied to suit local conditions. In general, the simplest allowable means would be ¼-inch mesh screens in sedimentation. As a rule no more treatment should be required than fine screening or sedimentation, or both, followed by chemical disinfection.

SEWERAGE. A remarkable example of deficient sewerage facilities and of inadequate records of such sewers as existed was disclosed in an exhaustive report on sewerage and sewage disposal made for Cincinnati, Ohio, during the year. Extensive and costly topographic and underground surveys were reported on and recommendations offered for comprehensive extensions to the sewerage system. Tentative sewage-treatment projects were also presented. A 150,000,000-gallon electric-driven sewage pump plant was being built for Boston. To lessen the leakage or infiltration of ground water into sewers, the use of bituminous compounds instead of Portland cement mortar was gradually increasing. The growing number of explosions in sewers, attributed largely to gasoline from garages, led to a number of investigations and to systematic inspections and preventative regulations in a number of cities. Consult vol. i of Metcalf and Eddy's *American Sewerage Practice* (New York), the first installment of a projected three-volume work on sewerage and sewage disposal. See also SEWAGE PURIFICATION.

SEX HYGIENE. See HYGIENE.

SGAMBATI, GIOVANNI. An Italian pianist and composer, died in December, 1914. He was born in Rome, May 28, 1843, and studied in that city under Barbieri, Natalucci, Aldega, and Liszt. He composed a pianoforte quartet (first heard in 1866), which established his reputation throughout Italy and Germany. In 1877 he was appointed professor of pianoforte at the Academy of Santa Cecilia, Rome. In 1896 he founded the Nuova Società Musicale Romana. His compositions include a *Requiem Mass* (1896); *Symphony in D; Concerto in G Minor; Two Quintets with the Piano;* and other symphonies, overtures, concertos, and also pieces for the organ. Sgambati greatly admired Wagner, and his own work is somewhat Germanic in character.

SHACKLETON'S EXPEDITION (THE IMPERIAL TRANSANTARCTIC EXPEDITION). See POLAR RESEARCH, *Antarctic*.

SHALLENBERGER, WILLIAM SHADRACH. Former member of Congress from Pennsylvania, died April 15, 1914. He was born in Mt. Pleasant, Pa., in 1839, was educated in the schools of that town and at Lewisburg University. He served as first lieutenant and adjutant in the 140th Pennsylvania Volunteers from 1852 to 1864, and was wounded at Gettysburg and at Todd's Tavern. From 1877 to 1883 he was a member of Congress from the Twenty-fourth Pennsylvania District. From 1897 to 1907 he was assistant postmaster-general.

SHEEP. See STOCK RAISING.

SHELBY, DAVID DAVIE. American jurist, died Aug. 22, 1914. He was born in Madison Co., Ala., in 1847, and studied law at Cumberland University. In 1870 he was admitted to the bar and until 1899 practiced at Huntsville, Ala. He was a member of the State Senate from 1842 to 1844, and in 1889 he was appointed United States Circuit Judge for the Fifth Judicial District.

SHELDON, ANDREW FLINT. An American physician and soldier, died Jan. 4, 1914. He was born in Huron, Wayne Co., N. Y., in 1831, and graduated from the University of New York in 1852. He practiced medicine at Lyons, N. Y., until the outbreak of the Civil War, when he was appointed assistant surgeon of the Seventh New York Cavalry. He served with this and other regiments throughout the war, acting for a time as executive officer in the medical director's office at Washington. He was subsequently commissioned by President Lincoln as surgeon of the United States Volunteers, and after twenty months' service was placed in charge of the Campbell United States General Hospital at Washington, where he remained until he was mustered out of service in August, 1865. He was commissioned lieutenant-colonel by President Johnson for meritorious services. After the war he returned to his native home where he practiced until within two years of his death. He invented a field hospital tent which was adopted throughout the service.

SHERMAN, SAMUEL STERLING. An American educator, died Nov. 23, 1914. He was born in Vermont in 1815, and graduated from Middlebury College. At the time of his death he was the oldest college alumnus in the United States. For several years before the Civil War he was president of Howard College, now in Birmingham, Ala., and the Judson College for Girls, now in Marion, Ala. During the Civil War he was president of Milwaukee College, now known as Milwaukee Downer College. He removed to Chicago in 1878 and was a resident of that city for the remainder of his life.

SHIPBUILDING. Shipbuilding, as well as ships and shipping generally, was an important topic in the year 1914, on account of the great European War in which commercial as well as military supremacy was involved. Whether Great Britain should continue to rule the seas and Germany be halted in her progress towards a vast mercantile marine were not the least of the questions at issue. Many merchant ships were under construction, though naturally the amount of construction varied in the various countries. The conditions of the war soon established the fact that Germany, Belgium, and Austria-Hungary were struck from the shipbuilding trade, while the United States in its effort to secure shipping of its own under the American flag was handicapped by the various conditions involved in its statutes and the general state of its shipping as well as uncertainty and lack of precedent under international law. Never before was so much interest paid to shipbuilding and shipping. While some impetus had been given to American shipping by the construction of the Panama Canal, nevertheless it was in view of the war and the internment of German and Austrian ships in various ports that the question was brought forcibly before the American people, as their commerce was vitally concerned.

Looked at from the world's standpoint the shipbuilding industry in Great Britain was in good condition, although costs of production were extremely high, and rapidity of workmanship was called for both by the government and private owners. Nevertheless, the industry proceeded with the coöperation of labor unions and shipbuilders, and while numbers of workmen were called into the military service yet the labor unions withdrew all restriction on labor, granting permission to work overtime to any extent, and to shift from yard to yard in accordance with the emergencies on the most pressing naval work. Furthermore, private yards working on naval contracts were enabled to draw workers from mercantile yards whenever they required them, and an extraordinary degree of elasticity in shipyard and engine-shop labor was manifested, so that greater progress was made on present naval work than would have been possible in times of peace.

Germany launched in 1914 a larger tonnage than did the Clyde, and if there had been no war it is hard to say to what extent the German mercantile marine would have been augmented. Nearly 200 vessels of over half a million tons displacement were launched. In France the work of the shipyards was interfered with, as many workers were being called to the military service. In Austria-Hungary very little work was done, and the British engineers, who had assisted in the newer plants, left the country. In Belgium after the war began the shipyards and engine shops were being used by the Germans for the manufacture of munitions of war.

Llody's Register of Shipping in its annual return of shipbuilding throughout the world during the year 1914, for obvious reasons does not give the warship work done in the European countries, and consequently the figures deal exclusively with merchant work.

TABLE FROM LLOYD'S REGISTER OF SHIPPING, SHOWING THE NUMBER AND TONNAGE OF VESSELS OF 100 TONS GROSS AND UPWARDS (EXCLUDING WARSHIPS) LAUNCHED IN THE VARIOUS COUNTRIES OF THE WORLD DURING THE YEARS 1910-1914

Year	*United Kingdom tons*	*British Colonies tons*	*Austria-Hungary tons*	*Denmark tons*	*France tons*	*Germany tons*	*Holland tons*
1910	1,143,169	26,343	14,304	12,154	80,751	159,303	70,945
1911	1,803,844	19,662	37,336	18,689	125,472	255,532	93,050
1912	1,738,514	34,790	38,821	26,103	110,734	375,317	99,439
1913	1,932,153	48,339	61,757	40,932	176,095	465,226	104,296
1914	1,683,553	47,534	34,335	32,815	114,052	387,192	118,153

Year	*Italy tons*	*Japan tons*	*Norway tons*	*United States tons*	*Other Countries tons*	*Totals No.*	*Totals tons*
1910	23,019	30,215	36,931	331,318	29,401	1277	1,957,853
1911	17,401	44,859	35,435	171,569	27,291	1599	2,650,140
1912	25,196	57,755	50,255	284,223	60,622	1719	2,901,769
1913	50,356	64,664	50,637	276,448	61,979	1750	3,332,882
1914	42,981	85,861	54,204	200,762	51,311	1319*	2,852,753

* This table does not include particulars of vessels of less than 100 tons gross; and takes into account only vessels that were launched in 1914, whether they were completed during the year or are still under construction. On account of the war, it is impossible to give full figures for the whole of the year 1914 in respect of several countries; for the same reason warship tonnage has been excluded throughout this summary.

The following table (from *Engineering*, London) shows the notably large merchant steamers launched during the year in British yards.

Name	*Tons*	*I. H. P.*	*Builder of Vessel*
White Star liner *Britannic*	50,000	60,000†	Harland and Wolff
Holland - American *Statendam*	33,000	20,300†	Ditto
Red Star liner *Belgenland*	27,000	18,400†	Ditto
Royal Mail Steam Navigation Company's Steamship *Almanzora*	15,600	12,150†	Ditto
Pacific Steam Navigation liner *Orbita*	15,500	11,840†	Ditto
Aberdeen liner *Euripides*	14,947	8,270†	Ditto
Anchor liner *Transylvania*	14,315	12,000*	Scotts' Shipbuilding and Engineering Co.
Anchor liner *Tuscania*	14,300	12,000*	Alex. Stephen and Co.
Canadian Pacific liners—			
Metagama	13,000	10,500	Barclay, Curle and Co., Limited.
Missanabie	12,469	10,500	
P. and O. liner *Kaisar I Hind*	11,430	14,000	Caird and Co., Limited.
Eagle Oil Transport Company's *San Nazario*	10,064	4,100	Wm. Doxford and Son.

* Geared turbines.

† Combination—four-cylinder piston engines and low-pressure turbine.

The following table from *Engineering*, London, gives the aggregates of production in the United Kingdom in the years 1914 and 1913.

	1914 † Tons	*1913 Tons*
Power-driven tonnage *	1,709,900	2,205,400
Sailing tonnage	27,800	31,600
Totals	1,737,700	2,237,000
His Majesty's Dockyards	......	74,960
Grand totals	1,737,700	2,311,960
Foreign-owned tonnage	354,500	507,000
Per cent of total	20.45	22
Total merchant tonnage	1,737,700	2,042,760
Per cent of power-driven merchant tonnage to total merchant tonnage	99.85	99.35
Horse-power of engines	1,473,800	2,679,000
Per cent of all naval tonnage to merchant tonnage	......	13.2

* Includes warships in private yards in 1913.

† Figures for 1914 do not include warship tonnage or engine power on account of the war and the suppression of military information.

From the following table it will be seen that the merchant marine of the United States on June 30, 1914, including all kinds of documented ships numbered 26,943 vessels of 7,928,688 gross tons, as compared with 27,070 vessels of 7,886,518 gross tons on June 30, 1913.

COMPARISON OF MERCHANT MARINE OF 1913 AND 1914

Classification Geographical distribution	*1913 No.*	*1913 Gross Tons*	*1914 No.*	*1914 Gross Tons*
Atlantic and Gulf coasts	16,924	3,743,354	16,767	3,795,522
Porto Rico	113	7,774	105	7,832
Pacific coast	4,577	1,028,550	4,778	1,084,640
Hawaii	48	20,746	43	16,336
Northern lakes	3,447	2,939,786	3,406	2,882,922
Western rivers	1,961	146,308	1,844	141,436
Total	27,070	7,886,518	26,943	7,928,688
Power and material				
Sail:				
Wood	6,901	1,238,594	6,317	1,165,401
Metal	144	269,086	142	267,139
Total	7,045	1,507,680	6,459	1,432,540
Steam:				
Wood	12,929	1,108,778	13,272	1,081,348
Metal	2,154	4,226,259	2,219	4,346,178
Total	15,083	5,335,541	15,491	5,427,526
Canal, wood	698	76,619	700	76,454
Barges:				
Wood	4,056	853,626	4,091	872,558
Metal	188	113,102	202	119,610
Total	4,244	966,728	4,293	992,168
Grand total	27,070	7,886,518	26,943	7,928,688

Construction During the Year

Geographical distribution				
Atlantic and Gulf coasts	597	202,394	554	215,141
Porto Rico	14	260	3	64
Pacific coast	409	44,589	330	36,420
Hawaii	2	75	2	75
Northern lakes	219	90,907	130	56,541
Western rivers	234	7,930	132	8,009
Total	1,475	346,155	1,151	316,250
Power and material				
Sail:				
Wood	66	15,610	51	13,749
Metal	6	13,000	...	.....
Total	72	28,610	51	13,749

Power and material	*1913* *No.*	*1913* *Gross Tons*	*1914* *No.*	*1914* *Gross Tons*
Steam:				
Wood	900	37,723	677	28,614
Metal	104	205,685	101	195,611
Total	1,004	243,408	778	224,225
Canal, wood	39	4,641	25	2,558
Barges:				
Wood	339	56,509	276	65,898
Metal	21	12,987	21	9,820
Total	360	69,496	297	75,718
Total construction	1,475	346,155	1,151	316,250

Shipbuilding in the United States. The amount of tonnage turned out by shipbuilders in the United States in 1914 was considerably less than in the previous year, though with exceptions in favor of certain yards on the Great Lakes, and on the Pacific coast. The construction of both merchant and naval ships of the largest builders is shown in the accompanying tables, which give the comparative rank of the leading shipbuilders.

TABLE I.—MERCHANT CONSTRUCTION

	No.	*Gross Tons*	*I. H. P.*
Newport News Shipbuilding and Dry Dock Co.	5	31,987	15,500
Maryland Steel Co.	9	25,045	12,690
New York Shipbuilding Co.	8	20,809	9,500
American Shipbuilding Co.	4	19,857	6,084
Great Lakes Engineering Works	9	19,598	7,875
Union Iron Works	3	14,072	5,200
Fore River Shipbuilding Corporation	2	11,196	4,200
American Car & Foundry Co.	16	10,451	.....
Harlan & Hollingsworth Corporation	5	5,524	4,540
W. & A. Fletcher Co.	2	2,806	3,200
Detroit Shipbuilding Co.	1	2,072	1,000
Johnston Bros.	5	1,071	580

TABLE II.—NAVAL CONSTRUCTION

	No.	*Tons Displacement*	*I.H.P.*
Fore River Shipbuilding Corporation	5	30,998	46,800
Wm. Cramp & Sons' Ship & Engine Building Co.	4	4,037	33,950
New York Shipbuilding Co.	1	2,600	9,000
Seattle Construction & Dry Dock Co.	4	2,146	3,350
Bath Iron Works	1	1,010	16,000

The largest vessel completed at the Fore River yard was the battleship *Nevada*, of 27,500 tons displacement and 26,500 indicated horsepower, while other naval work included a destroyer, the submarine tender *Fulton*, and two submarines, both the submarine tender and the submarines being fitted with Diesel engines. The engine for the *Fulton* was of about 1000 horsepower and was the largest single Diesel engine so far installed in an American ship. The merchant work turned out by the Fore River yard consisted of the freight steamers *Atlantic* and *Pacific*. The merchant tonnage of the Newport News Shipbuilding & Dry Dock Co. included the bulk oil freight steamers *John D. Archbold* and *John D. Rockefeller*, the Mallory freight steamships *Neches* and *Medina*, and the collier *Edward Pierce*. The work on hand included the battleships *Pennsylvania* and *Mississippi* and two revenue cutters.

At the Maryland Steel Company, Sparrows Point, Md., the last three of the American-Hawaiian Steamship Company's freight steamers, the *Washingtonian*, *Iowan*, *Ohioian*, of 6649 gross tons each, were completed during the year. There were under construction at the Maryland Steel Company's yard two colliers for the Panama Canal, of 10,650 gross tons and 7200 indicated horsepower each.

The New York Shipbuilding Company, Camden, N. J., during the year delivered two large oil steamers of 5188 gross tons and 2650 indicated horsepower each for the Gulf Refining Company; the collier *Hampden*, of 4725 gross tons and 2100 indicated horsepower, for the Coastwise Steamship Company; the municipal ferry *Mayor Gaynor*, of 1634 gross tons, for New York City, and four car floats for railway service. The output also included a protected cruiser of 2600 tons displacement, fitted with Thornycroft boilers and Parsons turbines, for the Greek government. The work in hand at the end of the year included the Argentine battleship *Moreno*, of 27,630 tons and 49,300 horsepower, equipped with Curtis turbines; the United States battleships *Oklahoma*, of 27,500 tons and 26,240 indicated horsepower, and the *Idaho*, of 32,000 tons and 37,000 horsepower. The former is propelled by reciprocating engines and the latter by Parsons turbines. There were also four destroyers and the destroyer tender *Melville*. Two large merchant vessels were also under construction, one of which is an oil tanker for the Gulf Refining Company, which is a duplicate of the two delivered; and the lumber steamer *William O'Brien*, of 5528 gross tons and 2000 horsepower.

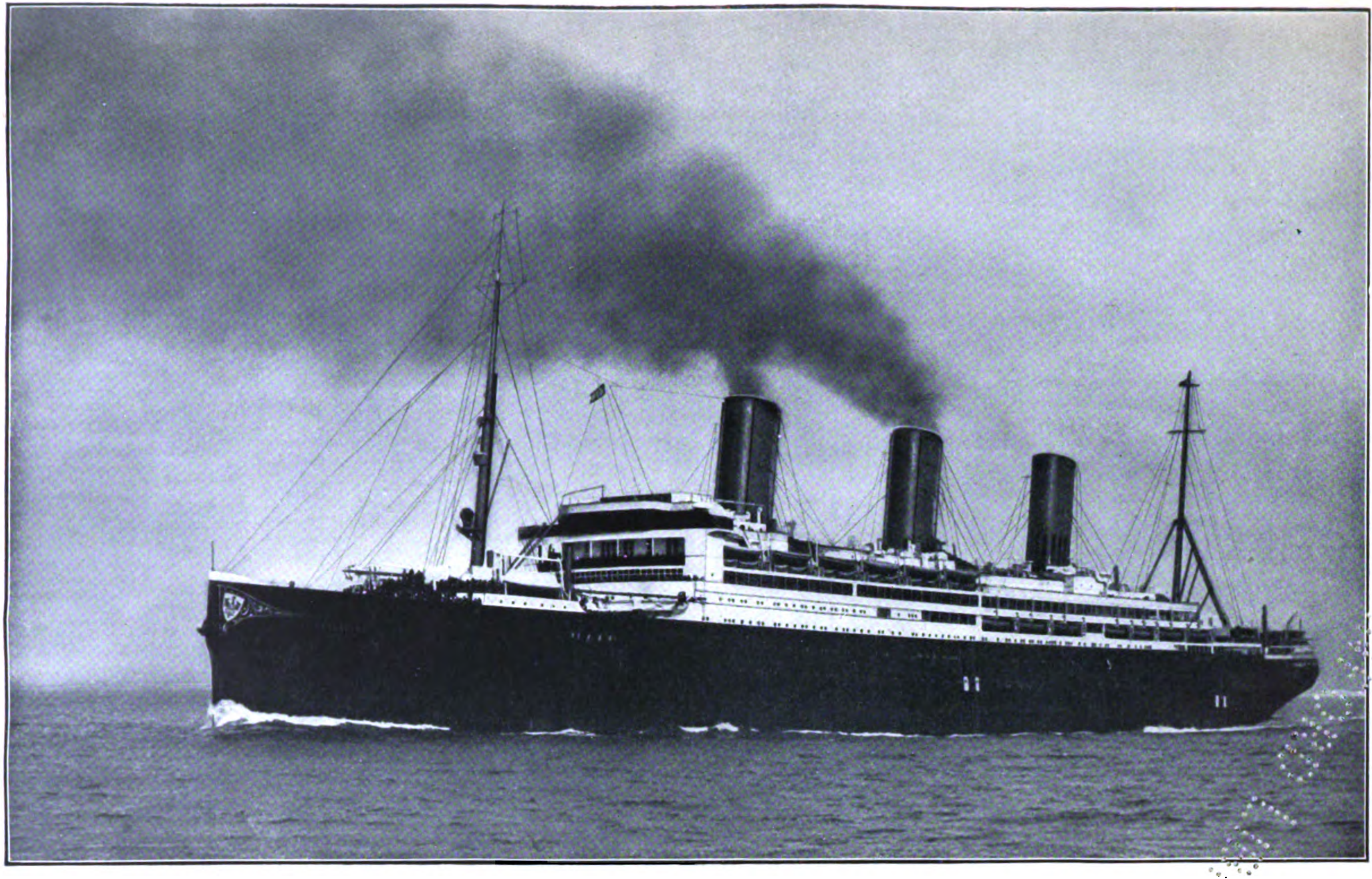
The total output from the Jackson & Sharp plant of the American Car & Foundry Company, at Wilmington, Del., amounted to 10,451 tons, which is considerably in excess of the output from any other wooden shipyard in the United States. The tonnage consisted principally of seagoing barges, car ferries, and dump scows.

The Harlan & Hollingsworth Corporation, Wilmington, Del., built the coastwise oil or lumber steamer *Francis Hanify*, of 2588 gross tons and 1720 indicated horsepower, and several excursion and ferry-boats.

William Cramp & Sons' Ship & Engine Building Company, Philadelphia, Pa., completed several naval vessels, including one submarine, two destroyers, and the gunboat *Sacramento*, and at the end of the year had under construction the two turbine passenger ships *Great Northern* and *Northern Pacific*, of 8255 gross tons and 25,000 horsepower, the car ferry *Henry M. Flagler*, for the Florida East Coast Railway, and five destroyers for the United States navy.

Shipbuilding on the Great Lakes. Outside of the work of the American Shipbuilding Company and the Great Lakes Engineering Company comparatively little construction was undertaken on the Great Lakes. The vessels built by the American Shipbuilding Company included the bulk freighter *Howard M. Hannah, Jr.*, of 6204 gross tons and 1760 horsepower, built at Cleveland; the bulk freighter *Robert L. Ireland*, of 6387 gross tons and 1600 horsepower; and the bulk freighter *William D. Crawford*, of 6385 gross tons and 1800 horsepower. The Great Lakes Engineering Works built the passenger steamer *South American*, of 2662 gross tons and 2500 horsepower, for the Chicago, Duluth, & Georgian Bay Transit Company; a bulk freighter of 6311 gross tons and

SHIPPING



HAMBURG-AMERICAN LINE STEAMSHIP "VATERLAND"
THE WORLD'S LARGEST STEAMSHIP, 1914

1800 horsepower, a lumber steamer of 1815 gross tons and 700 horsepower, and a special type of self-unloading freighter, the *Huron*, of 4810 gross tons and 1775 horsepower, for the Wyandotte Transportation Company.

The greatest output of the yards on the Pacific coast was by the Union Iron Works, San Francisco, Cal., which built two large oil tankers, the *Frank H. Buck* and *Lyman Stewart*, both of 6076 gross tons and 2600 horsepower, the former for the Associated Oil Company and the latter for the Union Oil Company. The Union Iron Works had under construction for the Standard Oil Company an oil tank steamer of 6000 gross tons and 2600 horsepower.

The Seattle Construction & Dry Dock Company, Seattle, Wash., had some minor work including submarines and the submarine tender *Bushnell*, of 2500 gross tons and 2500 horsepower, fitted with Yarrow watertube boilers and geared turbines, and building for the United States government.

Statement of vessels built in the United States and officially numbered during the calendar year, 1914:

Wood	*No.*	*Tonnage*
Sail	41	7,085
Steam	769	80,155
Unrigged	248	53,123
Total	1,058	90,363
Metal		
Sail	5	1,762
Steam	86	157,496
Unrigged	14	6,009
Total	105	165,267
Totals		
Sail	46	8,847
Steam	855	187,651
Unrigged	262	59,132
Grand total	1,163	255,630

NAVY YARDS. A greater amount of shipbuilding work was in progress in 1914 in the United States navy yards than ever before. The Secretary of the Navy authorized new construction work at three navy yards which hitherto had not undertaken the construction of vessels since the days of steel. Ship construction in addition to being carried out at the New York Navy Yard, Brooklyn, N. Y., and at the Mare Island Navy Yard, San Francisco, Cal., was to be extended to other yards and besides the battleships *Arizona* and *California* which were being built at the New York Navy Yard, the fuel ships *Kanawha* and *Maumee*, building at Mare Island Yard, work was begun on the construction of a submarine at the Portsmouth Navy Yard, Portsmouth, N. H., on the supply ship *No. 1*, at the Boston Navy Yard, and on the transport *No. 1*, at the League Island Navy Yard, Philadelphia, Pa. The necessity for installing new machinery and equipment delayed the construction on these vessels, however, for over a year.

On the recommendation of Rear Admiral R. S. Griffin, engineer-in-chief of the United States navy, the Secretary of the Navy, Daniels, authorized the installation of a steam turbine electric propelling plant on the superdreadnought *California*, which was to be built at the Brooklyn Navy Yard. A test of this type of power plant was made on the collier *Jupiter*, the first deep-sea vessel of any type to be fitted with electric motors, and the *California* will be the first electrically-driven warship ever built.

VATERLAND. The *Vaterland* which exceeded the *Imperator* by 41 feet in length and 2 feet in beam and in displacement by no less than 600 tons, was the world's largest steamship, and made its maiden voyage from Hamburg to New York in May. The *Vaterland* was 950 feet in length, 100 feet in beam, and displaced 54,282 tons. She was built as a 23-knot ship, but on her trial trip averaged a speed of 25.8 knots, and resembled the *Imperator* in many respects. The *Vaterland* was built with both longitudinal and transverse bulkheads, the former serving as inner walls of the coal bunkers and acting as an inner skin. Her main dining-room will accommodate 800 people and the ship has a maximum capacity of 5300 persons. It is driven by four screw propellers geared to four steam turbines, and there is a total bottom triple section extending well above the water line. The *Vaterland* on account of its size is unable to pass through the locks of the Panama Canal, which are but 100 feet in width. On her arrival in New York City, May 21, over 40 tugs were required to dock the steamer, on account of the tide and interference by a tug and tow. The *Imperator* returned to Germany, leaving the *Vaterland* interned at Hoboken after the beginning of the war. The Hamburg-American Line launched during the year the third of the famous trio of large ships which was christened the *Bismarck* by the German Emperor. This liner was 955 feet in length, 100 feet in beam, and 60,000 tons displacement, being designed to maintain an average speed of 25.3 knots. Like the *Vaterland* she was to be driven by turbines operating on four shafts.

AQUITANIA. A notable vessel of the year which was put into service, and had a brief passenger career, as it was taken early in the war by the Admiralty for a transport or merchant cruiser, was the Cunard liner, *Aquitania*. This vessel launched in April, 1913, was notable for its machinery, having a turbine working in triple series with a great range of expansion for steam so as to secure greater economy. The *Aquitania* had a quadruple screw, triple expansion turbine, was 865 feet in length, 97 feet in breadth, 64 feet 6 inches in depth, had an indicated horsepower of 56,000, and a sea speed of 23 knots. It had a displacement of 49,430 tons and a gross tonnage of 46,150 and a net tonnage of 17,500. It would carry 6000 tons of coal in permanent bunkers, and its passenger capacity was 618 first-class, 614 second-class, 1998 third-class, in addition to a crew of 972 persons, making a total carrying capacity of 4202. In addition to its representing the latest possible developments for transatlantic service, being designed to operate in connection with the *Lusitania* and the *Mauretania* to maintain a weekly passenger service across the Atlantic, the *Aquitania* was designed for possible naval service, with positions on the deck specially strengthened for carrying concealed pedestal mountings for a large number of quick-firing guns, there being two such gun positions amidships on the port and starboard sides, on the bridge deck, and aft on the poop, while on the forecastle there were two gun positions on each side of the ship and on the same deck two similar positions on each side so that 12 guns were provided for.

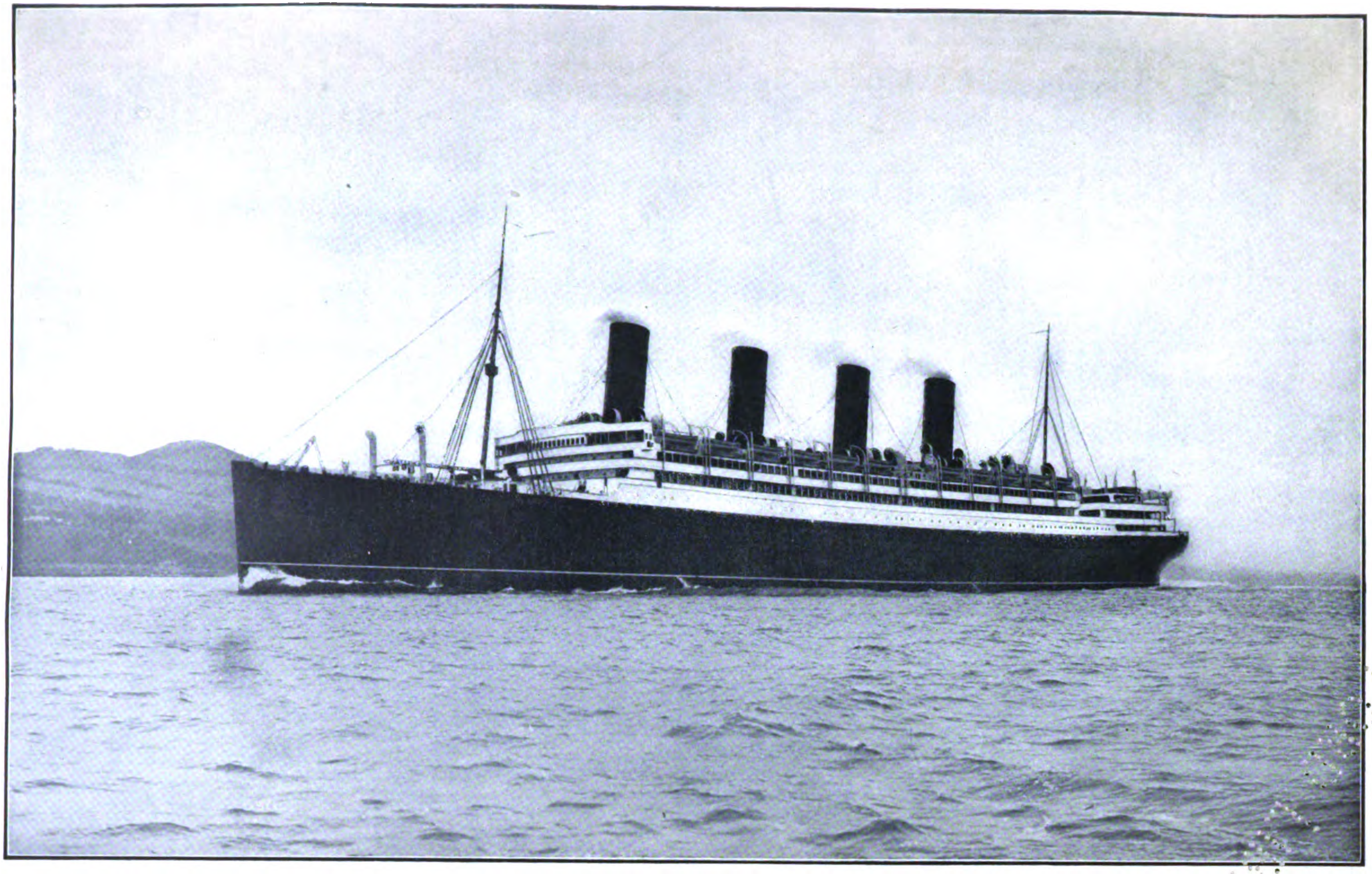
The Cunard liner, *Transylvania*, went into service during the year and marked the first application of the geared turbine to Atlantic service, though this device had been tried previously on ships of comparatively small size. The *Transylvania* displaced 19,400 tons, was 567 feet over-all, by 66 feet 3 inches molded width, and carried 305 first-class and 216 second-class passengers and 858 third-class passengers. She was equipped with two sets of Parsons turbines, giving a joint total shaft horsepower of 9000, and driving the ship at 15½ knots. The propellers ran at 120 revolutions per minute, and the gear reduction mechanism produced this speed from a revolution of the turbines 12½ times as fast.

SHIP REGISTRY ACT OF AUG. 18, 1914. An important step was taken on Aug. 18, 1914, brought about by the outbreak of the European War, when it was realized that the legislation in the United States embarrassed the citizens of the United States who own property at sea, inasmuch as they had been forced to employ other flags and registers which conformed to statutes, but not to actual ownership. From the date of the first Registry Act of September, 1789, American registry was confined to ships built in the United States, and Congress at the outset passed legislation providing that only documented ships could engage in the trade of the United States and divided these documented ships into three classes; first, registry for general purposes of trade and obligatory on foreign ships; second, enrollment for vessels in the coasting trade; and third, the annual license of a vessel for a year to engage in the coast trade or in the fisheries respectively. Foreign-built vessels owned by Americans could not carry on sea commerce or engage in any form of trade except under prohibitory penalties, and as a result of this policy and the fact that modern steel ships for some years could be built more cheaply abroad than in the United States, American capital desiring to invest in shipping had purchased abroad and operated its ships under other flags. They were prohibited from trading with the United States under the American flag though they were free to do so with all other parts of the world. For many years foreign-built ships representing American capital but under foreign flags were nearly equal in tonnage to ships registered under the American flag for foreign trade and had even greater carrying power. It was not until the Panama Canal Act of Aug. 24, 1912, that any effort was made to repeal the law which provided that for admission to American registry for foreign trade and trade with the Philippines, Guam, and Tutuila, foreign-built vessels certified by steamboat inspection service, as safe to carry dry and perishable cargo, not more than five years old at the time of registration, could be admitted. In March, 1914, the Secretary of Commerce recommended that the five-year age limit be repealed and a bill to that effect was introduced in Congress, but it was not until the outbreak of the European War that an act was passed which brought about this change of policy and enabled American owners to use their own property at sea under the American flag. In this act certain discretionary powers were given to the President to suspend the requirements as to the American citizenship of watch officers and the survey inspection and measurement by United States officers of foreign-built vessels so admitted to registry when the same was demanded by the needs of foreign trade.

Accordingly up to the end of the year (or more exactly up to Jan. 7, 1915) 110 vessels with a total gross tonnage of 395,460 were admitted to American registry. In this number were included ships belonging to the United States Steel Products Company, the Standard Oil Company, the Dollar Steamship Company, W. R. Grace & Co., the Vacuum Oil Company, and other well-known American corporations which previously had sailed under foreign flags. The largest registered was the *Oceana* of the Morse Dry Dock and Repair Company, running between New York and Bermuda.

WORLD'S SHIPPING IN 1914. In the accompanying table are given the number and net and gross tonnage of steam and sailing vessels of over 100 tons, of the several countries of the World, as recorded in *Lloyd's Register* for 1914–15.

Flag	*Steam*			*Sail*		*Total*	
	Number	*Net tons*	*Gross tons*	*Number*	*Net tons*	*Number*	*Tonnage*
British:							
United Kingdom	8,587	11,545,746	18,892,089	653	364,677	9,240	19,256,766
Colonies	1,536	949,386	1,631,617	552	156,666	2,088	1,788,283
Total	10,123	12,495,132	20,523,706	1,205	521,343	11,328	21,045,049
American (United States):							
Sea	1,113	1,315,976	2,026,908	1,377	943,376	2,490	2,970,284
Northern lakes	579	1,704,089	2,260,441	31	92,323	610	2,352,764
Philippine Islands	65	25,376	42,729	9	2,417	74	45,146
Total	1,757	3,045,891	4,330,078	1,417	1,038,116	3,174	5,368,194
Argentinian	244	112,165	188,892	69	32,789	313	221,681
Austro-Hungarian	433	653,873	1,052,346	12	3,373	445	1,055,719
Belgian	173	218,800	341,025	9	11,099	182	352,124
Brazilian	395	185,120	307,607	53	16,322	448	323,929
Chilean	91	60,865	96,473	32	29,444	123	125,917
Chinese	73	59,255	93,095	2	323	75	93,418
Cuban	53	36,334	58,450	4	641	57	59,091
Danish	576	454,262	770,430	246	49,751	822	820,181
Dutch	709	910,123	1,471,710	97	24,745	806	1,496,455
French	1,025	1,099,914	1,922,286	551	897,152	1,576	2,819,438
German	2,090	3,116,968	5,134,720	298	324,576	2,388	5,459,296
Greek	407	515,549	820,861	78	16,007	485	836,868
Italian	637	872,808	1,430,475	523	237,821	1,160	1,668,296
Japanese	1,103	1,088,383	1,708,386	.....	....	1,103	1,708,386
Mexican	48	27,328	45,069	9	2,129	57	47,198
Norwegian	1,656	1,173,036	1,957,853	535	547,869	2,191	2,504,722
Peruvian	19	15,226	28,771	46	23,935	65	52,706
Portuguese	105	55,449	92,429	105	28,502	210	120,931



CUNARD LINE ROYAL MAIL STEAMSHIP "AQUITANIA"

Flag	*Steam*			*Sail*		*Total*	
	Number	*Net tons*	*Gross tons*	*Number*	*Net tons*	*Number*	*Tonnage*
Rumanian	84	32,072	56,164	2	678	86	56,342
Russian	747	500,352	851,949	507	201,869	1,254	1,053,818
Siamese	11	7,741	12,860	.....	....	11	12,860
Spanish	589	537,575	883,926	58	14,897	647	898,823
Swedish	1,088	591,332	1,015,364	378	102,722	1,466	1,118,086
Turkish	142	68,096	116,317	60	16,841	202	133,158
Uruguayan	42	23,472	38,837	16	14,320	58	53,157
Other countries: Albania, Bulgaria, Colombia, Costa Rica, Ecuador, Egypt, Haiti, Honduras, Liberia, Montenegro, Nicaragua, Oman, Panama, Persia, Salvador, Samoa, Sarawak, Tunis, Venezuela, Zanzibar, etc.	74	31,161	54.798	80	28,911	154	83,709
Total	24,444	27,987,782	45,403,877	6,392	3,685,675	30,836	49,089,552

Lloyd's Register of Shipping was unable to publish, for the quarter ended December 31, the usual information regarding the shipbuilding industry throughout the world. It was stated that in the United Kingdom at the close of the quarter, of vessels of 100 tons and upwards the construction of which was actually begun, there were, exclusive of warships, 462 vessels of 1,627,316 tons gross under construction. This tonnage under construction was about 96,000 tons less than that which was in hand at the end of September and 329,000 tons less than the total at the end of 1913.

SHIPPING. See section *Commerce* under various countries.

SHIP REGISTRY. See SHIPBUILDING.

SHIPS, FOREIGN-BUILT. See UNITED STATES, section *Congress*.

SHIPWRECKS. See SAFETY AT SEA.

SHOCKS, SURGICAL. See ANÆSTHESIA; and TWILIGHT SLEEP.

SHOES. See BOOTS AND SHOES.

SHOOTING. There were no international rifle shooting matches held in 1914 of any great importance. The national contests of the United States which had formerly been held at a central point also were abandoned, the country being divided into five sections, only three of which held competitions. The team match in District A was won by Massachusetts and in District D by Arizona. The contest in District B was left undecided because of a dispute between the teams taking part. Charles C. Terry of the United States Marine Corps won the individual match in District A with a score of 326. In District B the winner was Sergt. E. E. Walters, Mississippi National Guard, with the same score, and in District D, E. A. Cole, First Kansas Infantry, with 323. The individual pistol matches resulted as follows: District A, Second Lieut. W. B. Loughborough, United States army, 731; District B, Priv. J. E. Crook, Florida National Guard, 567; District D, Quartermaster-Sergt. S. G. McKane, First Kansas Infantry, 683. The intercollegiate indoor championships were won by the Michigan Agricultural College and the outdoor by the Massachusetts Agricultural College.

In trap shooting the Interstate Association's Southwestern Handicap, held at Oklahoma City, Okla., was won by M. D. Dickman of Durant, Okla., with 88 out of the possible 100. Woodfolk Henderson of Lexington, Ky., won the Grand American Handicap, his score being 98 out of a possible 100.

The national amateur championship went to Ralph L. Spotts of the New York Athletic Club with 188 out of a possible 200. Spotts also captured the indoor title for the second successive year with a total of 97 out of a possible 100.

SHORT BALLOT. See ELECTORAL REFORM.

SHREVEPORT CASE. See RAILWAYS.

SIAM. An independent kingdom in southeastern Asia, extending approximately from the sixth to the twentieth degree of north latitude and from the ninety-seventh to the one hundred and sixth degree of east longitude. It is a buffer State between British Burma and French Indo-China. Capital, Bangkok. The total area is estimated at 600,000 square kilometers (198,900 square miles); the population (1910–11) at 8,149,487. Foreigners in the country in 1911, about 2000, of whom 538 Turks, 244 Germans, 218 French, 190 Japanese, 163 Danes, 135 Americans, 123 Italians, 80 Portuguese, 48 English, etc. Births numbered for the year 1910–11 162,491, and deaths, 84,495; Bangkok had 628,675 inhabitants, of whom 197,918 were Chinese. The immigration of Chinese in 1910 was 75,409; in 1911, 71,258; 1912, 68,361. Emigration of Chinese, 1910, 63,007; 1911, 52,562; 1912, 45,986. The national religion is Buddhism. Large educational powers are in the hands of the Buddhist monks.

PRODUCTION AND COMMERCE. The staple product and export is rice, and the area under this grain has been much enlarged by irrigation during recent years. Other crops of some importance are sesame, hemp, cotton, tobacco, pepper, and fruits. Cattle are raised in considerable numbers. The collection of rubber has been begun, and the cutting of teak in Northern Siam is an important industry, chiefly in British hands. Large quantities of fish are taken along the coasts. The only minerals worked on a commercial scale are tin and wolfram. The export of rice in 1912–13 was valued at 65,320,000 ticals (1 tical = 37.085 cents); teak, 5,600,000 ticals. The total imports were valued at 76,225,000 ticals and the exports at 81,971,000 (68,205,000 and 108,910,000 in 1910–11). The United Kingdom contributed imports valued at 20,622 thousand ticals and received exports valued at 3013 thousand ticals; China, 15,286 and 212; British India, 8222 and 2008; Germany, 5668 and 4194; Singapore, 5326 and 36,870; Dutch East Indies, 5959 and 475; Hongkong, 1445 and 25,343; Switzerland, 561 and 13; other countries, 13,136 and 9843. There were entered at the ports in the 1912–13 trade, 664 steamers, of 566,172 tons; cleared, 677, of 569,316. The merchant marine in 1913 included 33 steamers, of 8621 tons, and 45 sail, of 3612. State railways had a length in 1912 of 1024 kilometers (636 miles). Telegraph lines, 9457 kilometers (5876 miles), with 10,628 kilometers (6604 miles) of wires and 152 stations. Post offices, 223.

Finance and Government. In the table below the budget for 1913–14 is detailed in thousands of ticals.

Revenue	*1000 t.*	*Expend.*	*1000 t.*
Customs	6,808	Civil list	7,750
Farms	12,842	Interior	12,048
Agriculture, etc.	8,146	War	12,250
Forests	1,748	Marine	4,000
Railways	4,945	Foreign affairs	1,044
Post & Tels.	1,237	Government	5,208
Mines	2,481	Finance	3,267
Octrois	1,871	Justice	2,518
Personal	7,451	Worship, etc.	1,555
Opium	11,010	Public works	4,897
Other	5,710	Agriculture, etc.	1,272
		Other ordinary	8,787
Total	65,094	Total ordinary	64,599
		Extraordinary	15,228
		Total	79,827

The public debt in 1913 amounted to £5,712,320. The sovereign is the executive, aided by an appointed ministry and a legislative council of (at present) 41 members appointed also by the King. He is in effect an absolute despot. Succession is limited to the prince in blood ranking highest among the King's sons, but he frequently appoints his successor. The present King being without male issue, the succession passes presumptively through the line of the queen-mother's sons, according to their respective ages. The King in 1914 was (Somdetch Phra Paramindr) Maha Vajiravudh, born Jan. 1, 1881, proclaimed successor and Crown Prince 1895, and succeeded his father, Chulalongkorn I, to the throne Oct. 23, 1910. He was educated at Oxford and has traveled extensively. The administration and general condition of Siam have been greatly improved in recent years through foreign advisers in various branches of the government.

SICKLES, Daniel Edgar. An American soldier, died May 3, 1914. He was born in New York City in 1825 and was educated in New York University. He learned the printer's trade and also studied law, being admitted to the bar in 1846. For the seven years following he practiced law in New York, serving one term in the New York legislature. In 1853 he was corporation attorney for New York City, but resigned to become secretary of legation at London, serving from 1853 to 1855. In 1856 he was elected to the State Senate, serving for one year, and from 1857 to 1861 was member of Congress. In 1859 he shot and killed Philip Barton Key in Washington. Key was the son of the author of the "Star Spangled Banner," and was accused by Sickles of paying offensive attention to the latter's wife. On trial for murder he was acquitted.

At the outbreak of the Civil War, although a Democrat, he at once offered his services to President Lincoln. He had served for many years in the National Guard of New York, and had reached the rank of major. He was authorized by President Lincoln to raise a regiment, and he at once established a camp on Staten Island and began to enlist recruits. The first regiment he raised was composed almost entirely of Democrats. Following this he raised four other regiments, and himself paid the expenses of recruiting and drilling. These five regiments were called the Excelsior Brigade, and Sickles was induced by President Lincoln to take command of it as senior colonel. In September of 1861 he was appointed brigadier-general, and he succeeded General Hooker in command of a division of the third army corps, leading this division in the battles of Antietam and Fredericksburg. In November, 1862, he was appointed major-general of volunteers and commanded the third corps at Chancellorsville.

His most distinguished service was at the battle of Gettysburg, where on the second day of the battle he was in command of the Union left. On the extreme left and beyond the battle line as first established by General Meade were the Big and Little Round Tops, and in front of General Sickles' troops was the Peach Orchard Ridge. General Sickles decided that if he could gain that ridge he might be able to prevent Longstreet from reaching the Round Tops. Therefore an hour before the battle began, and without awaiting orders, General Sickles took a position in advance of the Federal battle line on Peach Orchard Ridge. The results of this move have been disputed; military experts opposed to it, declare that it endangered the entire Federal army, while supporters of General Sickles declare that his move was largely instrumental in winning the battle. The portion of the battlefield occupied by General Sickles' troops was called the Bloody Angle, and here the fight lasted from 3 o'clock in the afternoon until 7 at night. Half an hour before the fighting ended a shell shattered General Sickles' knee, but he buckled a strap around his leg and remained on his horse until the last shot was fired, the leg being amputated later on the same night. After he had recovered from the wound President Lincoln sent him on an inspection trip through the South and he was with Sherman's army on the march to the sea. After the war he was military governor of the Department of the South, which included North and South Carolina, and from 1866 to 1869 he was Minister to Holland. He then declined an appointment as Minister to Mexico and was sent instead to Spain, where he served until 1873, when he resigned. After the war General Sickles identified himself with the Republican party and he claimed the credit of having first mentioned General Grant as a candidate for President. From 1892 until 1894 he was a member of Congress, and served as sheriff of New York in 1890. In 1902 he was commander of the Medal of Honor Legion. General Sickles' last years were clouded by financial troubles and by sickness. At his death Peter J. Osterhouse and Grenville M. Dodge were the only two living major-generals who had commanded in the Civil War.

SIERRA LEONE. A British colony and protectorate on the west coast of Africa. The colony has a coast line of 210 miles. The protectorate extends to the north and east into the interior. Total area, 32,110 square miles; population, about 1,400,000. The peninsula of Sierra Leone and the land immediately adjoining had a population in 1911, inclusive of Freetown and suburbs, of 75,318. Freetown, the capital, lies about four miles up the Sierra River and had 34,019 inhabitants in 1911. It is an important coaling station and a port of registry. Except for the planting of rice and cassava for local consumption, and the gathering of forest products, there are practically no industries. Besides kola nuts, palm oil and kernels, rubber, copal, hides, and ginger are exported. There is a government railway, with 2-foot 6-inch gauge, from Freetown to Pendembu, a distance of 227½ miles. A branch runs from Boia Junction to Makump, 66¾ miles; another branch over the Rokell River to Makeme in the Karene district was opened to traffic in February, 1913. There is also a mountain railway from Freetown up the Lion Rock, a distance of 6 miles. In 1914 the total length of the line was about 300 miles. The imports and exports for the year 1912 were valued at £1,424,864 and £1,540,754 respectively. Revenue in 1912, £559,855; expenditure, £525,417; tonnage entered and cleared, 2,676,471, of which 1,872,980 tons British. The Governor in 1914 was Sir E. M. Merewether, appointed 1911.

SIKORSKY AËROPLANE. See AËRONAUTICS.

SILK. The silk industry during 1914 was one which various conditions ruled, but in the main was fairly satisfactory all things considered. Naturally American manufacturers were anxious to provide against any stoppage of foreign importations of goods and lack of raw material and dyestuffs, as the latter were for the most part imported from Germany. Commerce both on the Atlantic and Pacific was threatened by warships of the hostile powers, leading to increased insurance against war risk, and notwithstanding the fact that a record consumption of raw silk both in Europe and in the United States during the previous season had absorbed the large crop as well as the reserve stocks, there was a lack of raw material, and in August after the outbreak of the war a considerable premium was paid for ready stocks in the United States. In September the American mills were able to obtain sufficient raw silk to prevent their shutting down, but in October, financial conditions and lack of exchange disturbing the market, the mills unable to get orders for the spring trade were forced to reduce the production. The war brought about a reduction of raw silk in Italy and the curtailments since August were estimated at 25 per cent, while in Japan and Shanghai there was also a suspension of work in many cases. Nevertheless, silk fabrics continued to enjoy the favor of fashion, for broad silks as well as for ribbons.

The figures of raw silk production in the silk seasons 1912–13 and 1913–14, in pounds, including Tussah silk, as given by the Silk Association of America, are tabulated herewith:

Crop in Pounds	*1913-14 Pounds*	*1912-13 Pounds*
Europe	9,337,000	10,981,000
Viz.:		
Italy	7,804,000	9,044,000
France	772,000	1,108,000
Austria	580,000	655,000
Spain	181,000	174,000
Levant	5,004,000	4,997,000
Asia: Total quantity exported	*42,874,000	39,802,000
Viz.:		
China, Shanghai	† 9,975,000	10,582,000
China, Canton	5,995,000	4,961,000
Japan, Yokohama	26,650,000	28,851,000
India, estimated	254,000	408,000
Total, pounds	57,215,000	55,780,000
Tussah, raw	2,757,000	3,219,000
Grand total, pounds	59,972,000	58,999,000

* The production of raw silk in China is an absolutely unknown quantity.

† Excludes Tussah silk.

The figures for Asiatic silks are the actual shipments from the various countries of production, viz.: China, Canton, Japan, etc.

The domestic consumption of Japan is estimated to be approximately 30 per cent of her production. The remaining 70 per cent which is exported, being say 26,650,174 pounds during the season 1913-14. The total production equals the export divided by 70 and multiplied by 100, which therefore amounts to 38,071,600 pounds.

The domestic consumption of China (including Tussah silk) is estimated to be 55 per cent of her production in average years. The remaining 45 per cent which is exported, being 18,725,441 pounds from Shanghai and Canton during the season of 1913-14. The total production equals the export divided by 45 and multiplied by 100, which therefore amounts to 41,612,100 pounds.

There were a number of new silk mills built during the year and the record of new textile mill construction in the United States for 1914, compiled by the *Textile World Record*, showed that 51 mills were built for the silk trade. This was a slight decrease from the number of new mills built in 1913, but it was well above the average number erected yearly during the previous 10 years. Of the 51 new silk mills 12 were erected for ribbon manufacturing, 25 for broad silks, and the remainder divided between throwing and yarn mills. Pennsylvania reported 21 new mills erected, while New Jersey had 19, of which 13 were in Paterson. New mill construction was reported also from Maryland, Massachusetts, New Hampshire, New York, and Rhode Island.

SILO. See OCCUPATIONAL DISEASES.

SILVER. The total quantity of silver produced in the United States in the calendar year 1913 was 66,801,500 fine ounces, valued at $40,348,100. This was a considerable increase over the production of 1912, which was 63,766,800 fine ounces, valued at $39,197,500. The production in 1913 was the largest in the history of silver mining. The States producing the largest amount in their relative order were Nevada, Montana, Utah, Idaho, and Colorado. (Details of the production of these and other silver-producing States will be found in the sections *Mineral Production* under the States.) The price of silver per fine ounce averaged about $0.60 in 1913. The following table gives the production of silver in the United States in the calendar year 1914:

State or Territory	*Fine ounces*
Alabama	100
Alaska	398,500
Arizona	4,306,600
California	1,744,500
Colorado	8,612,900
Georgia	100
Idaho	12,689,500
Illinois	1,800
Michigan	404,500
Montana	10,746,000
Missouri	60,000
Nevada	14,814,200
North Carolina	1,300
New Mexico	1,682,100
Oregon	126,700
South Dakota	180,500
South Carolina	100
Texas	601,000
Tennessee	95,400
Utah	11,397,500
Virginia	1,000
Washington	54,100
Wyoming	100
Philippine Islands	9,700
Porto Rico	1,500
Total	67,929,700

The production of silver in the United States in 1914, according to the estimates of the United

States Geological Survey, amounted to about 67,929,700 fine ounces, with a value of $37,225,000. This was one of the greatest outputs since the mining of silver began, and but for the European War undoubtedly all records of production would have been broken. Increases in the mine production were notable in Idaho, California, and Arizona. Large decreases, however, were recorded in Montana, Utah, Nevada, and Colorado. Nevada retained first place in the silver output, with Idaho second. The production of Nevada decreased about 800,000 ounces, while that of Idaho increased about 3,000,000 ounces. The imports of silver in 1914 were valued at $25,331,000 and the exports at $50,500,000. See METALLURGY.

SIMPSON, WILLIAM KELLY. An American laryngologist and otologist, died at New York City on Feb. 6, 1914, aged 58 years. He graduated at the College of Physicians and Surgeons, New York City, in 1880. He was professor of laryngology in that institution for nine years; was consulting laryngologist to the Seton and St. John's hospitals, Yonkers, and the Somerset Hospital, New Jersey; laryngologist to the Vanderbilt Clinic; and consulting otologist to the Presbyterian Hospital, New York City. He was a Fellow of the American Medical Association and of the New York Academy of Medicine, and a member of the American Laryngological Society.

SINGAPORE. One of the Straits Settlements (q.v.).

SION, ALIX MARIE ADELAIDE DE. A French actress, who under the name of "Pasca" was at one time one of the foremost emotional actresses in France. She died May 25, 1914. She was born in Lyons in 1835, received a musical education in Paris, and although she developed remarkable talent as a singer, married at 20 years of age and abandoned her music. Five years later on the death of her husband she decided to go on the stage, studied declamation and the technique of the stage for three years, and in 1864 first appeared in *Le Demi-Monde* at Gymnase. A few years later in the character of Heloise Paranquet, she achieved a remarkable success, and within three years had become one of the most famous of French actresses. In 1870 she went to Russia where she also was successful, and on her return to Paris her popularity grew even greater than before. In 1885, at the age of 50, she retired from the stage and until her death lived quietly in Paris.

SIX-HUNDRED-AND-SIX. See SALVARSAN.

SKATING. The international outdoor amateur championships were held at Saranac Lake in January. Robert M. McLean of Chicago as in former years carried off the chief laurels. McLean won the 220-yard, the quarter-mile, the half-mile, the three-quarter-mile and the two-mile, events. In the international indoor championships, held at Cleveland, Ohio, McLean captured four races—the quarter-mile, the one-third-mile, the half-mile, and the one and one-half-mile. McLean also established the new record of 5 seconds for 50 yards at Lake Placid, N. Y.

O. Mathiesen of Norway and Ippolitow of Russia divided the honors at the world's championships held near Christiania, Norway, in February. Mathiesen won the 500-meters, the 1500-meters, and the 5000-meters. Ippolitow was victor in the 10,000-meters. Norman Scott of Montreal won the figure skating championship at New Haven, Conn., in March.

SKYSCRAPERS. See ARCHITECTURE, and TALL BUILDINGS.

SLEEPING SICKNESS. The British government report on sleeping sickness was recently issued. The committee investigated the part played by wild animals in Africa, and the tsetse fly, and found that there were two distinct forms of sleeping sickness. The Uganda type, which appears to be a new disease, was first recognized in 1901. This type is violently epidemic and according to reliable estimates caused about 200,000 deaths between 1898 and 1906. The type found in Nyassaland and Rhodesia has been recognized as a distinct form only since 1908. It is more deadly but not epidemic. Only 153 cases in Nyassaland, and 107 in Rhodesia were recognized between 1908 and 1914. No treatment for the latter form has been successful, and the disease is looked upon as invariably fatal. The tsetse fly has been proved the carrier in both types, but Uganda sleeping sickness is caused by a different species of the tsetse fly from that which carries the Rhodesian form. The Uganda *Glossina palpalis* never goes far from water, whereas the Nyassaland insect, *Glossina morsitans*, is capricious in its distribution, is independent of water, and its movements are unknown. The committee finds that animals play a minor part, as compared with man, as a reservoir from which the fly derives the infection.

SMALLPOX AND VACCINATION. The January *Bulletin* of the New York State Board of Health gave a history of the smallpox epidemic at Niagara Falls. The article set forth the orders and communications issued and the measures taken to assist the local authorities in stamping out the epidemic in that city, which had been a centre of strong antivaccination sentiment. The disease first appeared in the spring of 1912 and existed practically continuously from that time to the present. It became epidemic in November, 1913, and up to the end of December there had occurred about 200 cases. It was checked and terminated by vaccination. There was a total of 823 cases in the State during 1913, only 20 of which occurred in New York City, which has more than half the population of the State. On February 24 the smallpox quarantine, which had been enforced for eight weeks, was removed. More than 20,000 persons were vaccinated, and there were 16 cases of smallpox under quarantine. Under the policy of resistance by the Dowieite community in Zion City, Ill., to the efforts of the Illinois State Board of Health, the number of cases of smallpox in that place increased to nearly 50. On November 3 the overseer of the community, under protest, consented to allow the State authorities to take charge of the situation. Dr. C. E. Crawford, medical inspector for the Illinois State Board of Health, at once instituted a rigid quarantine on the premises of all persons affected with smallpox and appointed six deputy inspectors to assist in maintaining quarantine. He prohibited public gatherings and canvassing from house to house, and ordered all children under 16 years of age to remain at home. All the inhabitants who were willing were vaccinated, the Illinois State Board of Health having no power under the law to compel vaccination. The surrounding towns declared a rigid quarantine against Zion City. Of 714 cases of smallpox at the Louisville Eruptive Hospital during the year ended August 31, but one resulted fatally. The superintendent of the hospital called attention to the fact that 99 per cent of the smallpox patients received at the hospital had never been vaccinated or had been vaccinated without result. In order to form an idea as to how well the population of New York had been vaccinated, surveys were made of various groups in different sections. Information thus obtained regarding 12,437 persons showed that 12,096 or 96 per cent had been vaccinated. The average time which had elapsed since the last vaccination was 11 years. Fifty persons or .04 per cent had had smallpox, and 378 or 3 per cent had never been vaccinated. School children were well protected by vaccination which is required by law. Children under school age, however, constituted a large proportion of the unvaccinated. Of a total of 1580 children inquired about, 291, or 18 per cent, had never been vaccinated. In a negro tenement block 35 per cent of the children under school age had not been vaccinated. A campaign was set on foot to secure more complete vaccination of the entire population. A report from New Zealand in January, 1914, described an epidemic of smallpox in that country which affected 2000 people, chiefly Maori natives, who were very susceptible to the disease and who were not vaccinated. An epidemic prevailed at the same time in Australia, with 900 cases, but no deaths. The disease among the Maoris for the most part was mild, and the percentage of deaths small. On account of the character of these people, and their wandering life, accurate statistics could not be obtained. The disease was traced, it is said, to a case in a man from Utah, U. S. A., who had a pustular disease of a mild type while on the steamer going over. See Hygiene; Vital Statistics.

SMITH, Charles William. An American Methodist Episcopal bishop, died Oct. 31, 1914. He was born in Fayette Co., Pa., in 1840, and was educated in various schools. In 1859 he was ordained to the Methodist Episcopal ministry, and was pastor in various churches in and near Pittsburgh until 1879. From 1880 to 1884 he was presiding elder of the Pittsburgh district, and from 1884 to 1908 was editor of the Pittsburgh *Christian Advocate*, in the latter year being elected bishop. He was a member of many important committees, and a trustee of several institutions, including Woman's College, Baltimore, and Puget Sound University, Washington. He was eight times a member of the General Conference of the Methodist Episcopal Church, and was a delegate to ecumenical conferences in Washington, London, and Toronto. He was a member and vice-chairman of the commission to revise the constitution of the church from 1896 to 1900, and was also a member of the joint commission on unification of Japanese Methodism by which members of these churches in Japan were organized into an independent church —the Methodist Church of Japan.

SMITH, John Butler. An American public official, former Governor of New Hampshire, died Aug. 10, 1914. He was born at Saxton's River, Vt., in 1838, and received an academic education. In 1864 he began the manufacture of hosiery and knit goods, and built up a large business at Hillsboro. He served as presidential elector in 1884, and was a member of the Executive Council of New Hampshire from 1887 to 1889. In 1893–94 he was Governor of that State.

SMITH, Joseph. President of the Reorganized Church of the Latter Day Saints, died Dec. 10, 1914. He was the son of Joseph S. Smith, founder of the Mormon Church, was born at Kirtland, Ohio, in 1832, and received a common school education. After the removal of the main body of Mormons to Utah, he remained with his mother's family in Missouri, where he kept a hotel, and worked on a farm till he reached his manhood. He studied law, but did not seek admittance to the bar. In 1870 he became president of the Reorganized Church of the Latter Day Saints, a body opposed to polygamy and not affiliated with the Church in Utah. He was editor of the *Saints' Herald*, the organ of his denomination, from 1863 to the time of his death.

SMITH, Sir William Alexander. A Scotch philanthropist, died May 11, 1914. He was born in Thurso, Scotland, in 1854, and was educated at the Academy in that town. In 1874 he entered the First Lanarkshire Rifle Volunteers, and retired as honorary colonel in 1908. In 1883 he founded the Boys' Brigade, which became a very successful organization until it was superseded to a large extent by the Boy Scouts. He made several visits to Canada and the United States, visiting the Boys' Brigade in those countries, and in 1908 he commanded a parade of 10,000 boys before Prince Arthur of Connaught in Glasgow on the occasion of the semi-jubilee of the brigade. He served in 1909 on Sir John Dewar's departmental committee on the employment of boys and girls from the congested districts of the Highlands.

SMITH COLLEGE. An institution for the higher education of women, at Northampton, Mass., founded in 1871. There were enrolled, in all departments in the autumn of 1914, 1638 students, and the faculty numbered 146, exclusive of library and office staff. There were 29 additions to the faculty at the beginning of the collegiate year 1914–15. There was raised during the year an endowment fund of $375,049. The productive funds of the college amounted at the end of the college year 1913–14 to $1,695,892 and the income to $78,502. The library contains approximately 50,000 volumes. The president is Marion L. Burton.

SMITH-LEVER EXTENSION ACT. See Universities and Colleges, *University Extension*.

SMITHSONIAN INSTITUTION. During 1914 the institution continued to carry on investigations in various lines throughout the world by means of allotments from its funds. By a resolution of the Regents on May 1, 1913, the secretary was authorized to reopen the Smithsonian Institution laboratory for the study of aërodynamics to be known as the Langley Aërodynamical Laboratory. The functions of the laboratory include the study of the problems of aërodromics, particularly those of aërodynamics, with such research and experimentation as may be necessary to increase the safety and effectiveness of aërial locomotion for the purposes of commerce, national defense, and the welfare of man. Work was carried on in this laboratory during 1914. An interesting feature of the year was the reconstruction and successful launching of the Langley aëroplane. The tests which were made by Mr. Glenn H. Curtiss showed that Mr. Langley had succeeded in building the first aëroplane capable to sustain free flight with a man. During the fiscal year 1913–14 the director carried on geological researches in the Canadian Rockies, and Dr. R. H. Bassler studied the geological history of the Appalachian Valley of Maryland. Work was also in progress on a geological survey in Panama, authorized in 1913. Researches in natural history and ethnology provided by a special trust fund established by Mrs. E. H. Harriman were carried on by Dr. C. Hart Merriam during 1913–14, the principal work being on the big bears of America. Steps were taken toward the organization of an American School of Archæology in China.

The institution issued during the year 6807 printed pages, with 834 plates of illustrations. The aggregate distribution was 202,671 copies of pamphlets and bound volumes. Plans for the new George Washington Memorial Building, authorized by Congress in 1913, were selected in May, 1914, and construction work will begin in 1915. The cost of the building will be about $2,000,000.

SMOKE ABATEMENT. A number of additional *Smoke Investigation Bulletins* embodying studies made by the Mellon Institute of Industrial Research and School of Specific Industries were issued during the year by the University of Pittsburgh. See METEOROLOGY.

SOCCER. See FOOTBALL.

SOCIAL ECONOMICS. During the past decade there has come into rather extensive use the term Social Economics to distinguish a new point of approach to the problems of economic life. The long-established viewpoint of orthodox economists had been that almost the sole object of economic effort and organization was to increase the volume of production. The new school starts with the assumption that the quantity of wealth is sufficient to make possible a high standard of well-being for all; and that consequently the most important problems are those dealing with the distribution of wealth and the relations of economic activity to health, safety, the standard of living, and the betterment of the lives of workers. This viewpoint rejects to a very large degree the doctrine of *laissez faire* and would boldly grapple with social and economic organization and the conditions of human life so as to spread the best fruits of modern culture to all ranks of society. Material coming within the scope of Social Economics will be found under the following headings: CHILD LABOR; LABOR; LABOR LEGISLATION; MINIMUM WAGE; OCCUPATIONAL DISEASES; OLD-AGE PENSIONS; PENSIONS FOR MOTHERS; PROSTITUTION; SOCIAL INSURANCE; SOCIOLOGY; WELFARE WORK; WOMEN IN INDUSTRY; and WORKMEN'S COMPENSATION.

Bibliography. In addition to the following books the reader should consult references under POLITICAL ECONOMY and SOCIOLOGY: E. N. Bennett, *Problems of Village Life;* R. H. Best and C. K. Ogden, *The Problem of the Continuation School and its Successful Solution in Germany;* G. Blaiklock, *The Alcohol Factor in Social Conditions;* F. E. Farrington, *Commercial Education in Germany;* R. Higgs, *The Heart of the Social Problem;* G. Ives, *A History of Penal Methods;* Bouck White, *The Carpenter and the Rich Man;* S. Joseph, *Jewish Immigration to the United States from 1881–1910;* E. A. Ross, *The Old World in the New. The Significance of Past and Present Immigration to the American People;* G. W. Tupper, *Foreign-born Neighbors;* Report of the Commissioners, *Royal Commission of Canada on Industrial Training and Technical Education;* M. E. Bulkey, *The Feeding of School Children;* F. T. Carlton, *The Industrial Situation. Its Effect upon the Home, the School, the Wage-earner, and the Employer;* W. H. Dawson, *Municipal Life and Government in Germany;* N. B. Dearle, *Industrial Training;* Bernard Flexner and R. N. Baldwin, *Juvenile Courts and Probation;* Scott Nearing, *Reducing the Cost of Living;* E. H. Williams, *The Question of Alcohol;* Helen Bosanquet, *Social Work in London, 1869–1912;* W. Foss and J. West, *The Social Worker and Modern Charity;* Richmond and Hall, *A Study of Nine Hundred and Eighty-five Widows Known to Certain Charity Organization Societies in 1910;* Sydney J. Chapman, *Social Betterment.*

SOCIAL HYGIENE. See HYGIENE; and PROSTITUTION, *National Conference.*

SOCIAL INSURANCE. One of the most important phases of social legislation of recent years has been the application of the insurance principle to various classes of events, such as accidents and sickness which have far-reaching effects on the welfare of the industrial population. The inability to find work, the loss of time or of working capacity resulting from injury or disease may result in the moral and physical degradation of the worker and his family. Poverty thus induced is followed frequently by chronic ill-health, vice, crime, and a host of other ailments from which society as a whole suffers heavily. These incidents of life are therefore comparable to death, in that they may occur at any time in the life of any one, and may entail hardship on others. They can therefore be met, in part, by insurance, as some of the evils of death are met by life insurance. Thus there has developed a considerable demand for insurance against unemployment (q.v.); and against accidents during employment (see WORKMEN'S COMPENSATION); against diseases peculiar to certain trades (see OCCUPATIONAL DISEASES); against the inevitable incapacities of age (see OLD-AGE PENSIONS); and against sickness and premature old-age. The latter is known as invalidity insurance.

The National Civic Federation delegated Mr. J. W. Sullivan of the Typographical Union and Mr. P. Tecumseh Sherman of New York to investigate European schemes of compulsory insurance against sickness, in force in 1914. The world-wide interest in the subject has resulted in the International Congress on Social Insurance, which will hold its ninth biennial session at Washington, D. C. in September, 1915, at the invitation of the Federal Government. A very extensive American committee on arrangements has been formed, headed by three members of the Cabinet, the secretaries of Labor, Treasury, and Commerce.

COMMITTEE ON SOCIAL INSURANCE. Early in 1913, the American Association for Labor Legislation created a Committee on Social Insurance (see LABOR LEGISLATION, AMERICAN ASSOCIATION FOR); this was followed some months later by the first American conference on social insurance, at Chicago, and the publication of a classified bibliography on the subject; then, in December, 1913, sickness insurance was discussed at the annual meeting at Washington. The Committee then formulated, after many sessions, and issued in July the main principles upon which it proposed to draft a sickness insurance bill. These included the following: sickness insurance should be compulsory, on the basis of joint contribution of employer, employee, and the public; the compulsory system should include all workers so far as practicable; voluntary insurance should be provided for certain groups of workers and others; sickness insurance, providing for 26 weeks, should be supplemented by invalidity insurance with separate funds; sickness funds should be in charge of local committees representing all parties; a federation of local trades, for medical relief, is desirable; invalidity insurance should be met by funds covering several sickness districts and administered on a representative basis; both funds should provide adequate medical service, supplies, nursing, and hospital care; cash benefits also should be provided; prevention should be emphasized as a means of stimulating a national movement for health conservation.

COMMERCIAL INSURANCE. In July the Metropolitan Insurance Company announced that it would issue contracts of insurance against sickness or accidental injuries not arising out of and in the course of employment, to groups of persons representing employees of firms, labor unions, lodges, or others, whether men or women. These new policies provided for full benefits for a first period of 26 weeks; one-half benefits for a second subsequent period of 4½ years; and one-fourth benefits for a third period up to age 65. No benefits were to be paid during the first seven days of disability, nor for the first 13 weeks of insurance. This plan was a natural extension of the schemes of sickness and accident insurance offered by numerous casualty companies of the country, and was welcomed by those engaged in the promotion of social insurance.

SOCIALISM. INTERNATIONAL ORGANIZATION. In the interim from one International Socialist Congress to the next, the general affairs of the international movement are managed by a bureau formed of delegates of the 41 Socialist parties of 27 countries, and having its permanent seat in Brussels. In January, 1914, the International Bureau issued a manifesto to the Socialists of Great Britain urging the British Socialist party, the Fabian Society, and the Independent Labor party to carry out the work of unification started in the preceding December by the special session of the International Bureau in London (consult the YEAR BOOK for 1913). During the spring the International Bureau was chiefly concerned with plans for the International Congress which was to be held in Vienna on Aug. 23, 1914. The Congress was to discuss problems connected with unemployment, high cost of living, alcoholism, imperialism, and Socialist tactics in case of war; and it was hoped that the great International Congress, representing powerful Socialist organizations in more than a score of countries, would commemorate in jubilant fashion the founding of the International Association of Workingmen by Karl Marx fifty years ago. The War of the Nations, however, prevented the Vienna Congress and shattered the international organization. Brussels, the seat of the International Bureau, was occupied by German armies. The Dutch Socialists requested the reëstablishment of the Bureau in the Netherlands; Americans favored the United States; but the Bureau was not reconstructed. An International Socialist Peace Conference was called to meet at Copenhagen in January, 1915.

INTERNATIONAL SOCIALISM AND THE PREVENTION OF WAR. The famous Austro-Hungarian ultimatum to Servia (July 23) brought international Socialism face to face with the most serious test it had yet had to withstand. Again and again the assertion had been made that the Socialists would not allow a great war in western Europe. Inspired by the command of Karl Marx —"Workingmen of the world, unite!"—The Socialists stood for the international brotherhood of the working classes, scornful of national boundaries, and hostile to all bourgeois governments. The war on capitalism was supposed to be the only war in which Socialists would willingly fight. Many believed that the universal Socialist demonstrations against war and the temper of the International Socialist Congress of Basle, November, 1912, had prevented the Balkan conflagration from inflaming all Europe and had given proof that a threat from the working classes could compel the bourgeois governments to keep the peace. As late as July, 1914, the Socialist party in France approved the much discussed contention that in case of last resort the Socialists should declare a general strike as the most effective means of preventing war. When, therefore, in that terrible week at the close of July, the nations of Europe hesitated on the threshold of the world's greatest war, some prompt deterrent action, a general strike, an insurrection, if need be, was looked for from the Socialists who had so unsparingly denounced modern warfare. No general strike was called. No insurrection occurred. With all its pacific plans, with all its 4,500,000 voters in Germany, its 1,500,000 voters in Austria, its 1,400,000 voters in France, its 900,000 voters in Italy, and its numerous adherents in other countries—Socialism was powerless. Socialists could only protest. On July 29, the day after Austria-Hungary declared war on Servia, a huge anti-war mass-meeting was held in the Cirque Royal of Brussels. The chairman of the meeting, M. Vandervelde, announced that the International Socialist Congress would be held on August 9 instead of August 23, and in Paris instead of Vienna, with the object of discussing measures for the prevention of a world-wide war. At the Brussels meeting Keir Hardie from Great Britain, Haase from Germany, Jaurès from France, Agnini from Italy, Roubanovitch from Russia, Troelstra from the Netherlands, Iglesias from Spain, Branting from Sweden, Stauning from Denmark, and Grimm from Switzerland eloquently testified that international Socialism was anxious for peace. In Berlin on July 29, 27 meetings brought out 60,000 manifestants against war. Anti-war demonstrations were organized in other great German cities. On August 2 a monster meeting in Trafalgar Square, London, applauded the orations in which Keir Hardie, Ben Tillet, and other labor leaders urged Great Britain not to follow Germany and Russia into the arena. But mass-meetings and passive protests were of no avail. Jean Jaurès, the brilliant orator of the French Socialists, was murdered by a misguided fanatic, July 31. (See JAURÈS). No other Socialists were reported to have died for their belief in the international solidarity of labor. That international Socialism had failed to prevent the war, was obvious; the reasons for the failure were almost equally obvious, although often overlooked. In the first place, the whole machinery of international communication was so choked by telegrams, letters, refugees, mobilizing soldiers, and war supplies, that the leaders in the various countries could not easily keep in touch with each other. The introduction of the censorship and martial law completed the isolation. Even in spite of this difficulty, the Socialists might have done something, had they known what to do. But the International had never been able to decide unreservedly in favor of an automatic general strike in all countries in case of threatened war. This was the most powerful reason for the collapse of Socialist pacificism. The Socialists in France were not willing to cripple their country by striking, unless the Socialists of Germany would certainly and simultaneously do likewise. Consequently, the most that could be done was to call the International Congress to convene at Paris, August 9, for the discussion of tactics. Needless to say, the Congress was never held. The time for discussion had passed.

Socialism and Patriotism. It might perhaps have been expected that even after the declaration of war, the Socialists in the various belligerent nations would have opposed the war, would have resisted enlistment, would have suffered death as traitors to their country rather than help to kill "Comardes" in the enemy's army. On the contrary, we find French and Belgian Socialists forgetting their hatred of the bourgeoisie, joining in cabinets for "national defense"; we find the 110 Socialist votes in the Reichstag cast in favor of the German war budget; we find Gustave Hervé voluntarily enlisting in the French army; we read of the German Socialist Frank's gallant death on "the field of honor" at Liége. The Russian Socialists, some of the British Socialists, and a minority of the German Social Democrats remained more or less passively un-patriotic. The Belgian, the French, many of the British, and most of the German Socialists espoused the cause of their respective nations in the war with violent patriotism and ardent enthusiasm. Details will be given below in the sections on the various countries; in this place, however, it may be remarked that in the flood of controversial literature regarding the attitude of the Socialists toward the war, three facts have emerged. (1) In the first place, the Socialist party, in Germany, for example, depended so largely on the votes of bourgeois "intellectuals," middle-class progressives, and miscellaneous malcontents, that to a surprising extent opportunist grasping for immediate advantages had superseded the old fanatical belief in an inevitable proletarian revolution. Only a fraction of Germany's 4,500,000 "Socialist" voters were thorough-going Marxians; and not all of the convinced Socialists could be depended upon to place their economic creed before their country's need. Similar statements might be made of the other countries. (2) In the second place, many Socialists became patriots because they considered it just to defend their country against an unwarranted attack. To all Socialists the distinction between a "war of aggression" and a "war of defense" was familiar: against the former the Socialist was bound to protest, in the latter he might rightly fight. The distinction was a fatal one. The German Socialists said they were fighting in a war of defense; the French and Belgians swore that their countries had been foully attacked by Germany; the British declared that Prussian "Junkerdom" was to blame. Where did the truth lie? Taught by sad experience, some Socialists regretfully admitted that the "war against war" meant nothing so long as a distinction was maintained between wars of aggression and wars of self-protection. (3) In the third place, the war forced home the fact that Social Democracy achieved on a national basis might have the effect of intensifying rather than abolishing international strife. Because social insurance, factory regulation, a strong organization, and the possession of 110 representatives in the Reichstag made the outlook for Socialism seem brighter in Germany than in Russia, the German Socialist felt the better justified in defending German "Kultur" against "Czarism." In like manner French, Belgian, and British Socialists argued that they were fighting in behalf of democratic government as against German militarism and imperialism. Thoughtful writers, moreover, gloomily prophesied that in proportion as the working classes in any nation attained political liberty and economic well-being, they would become the more earnestly patriotic, and would fiercely desire to uphold the independence and enhance the prosperity of the nation upon which their own liberties and interests depended. Unless nations could be taught a wise unselfishness, Social Democracy would intensify nationalism and would make national rivalries the more terrible, because the more popular.

Possible Advantages for Socialism. Optimistic Socialists, far from becoming discouraged at the failure of the International to prevent war, claimed that the war only confirmed their theories and would contribute to their triumph. The war was the greatest crime of the capitalist governments of Europe; it meant the collapse of capitalist society. In the heat of war the various governments had taken mighty strides toward Socialism. Governments had assumed the power to regulate prices, to run the railways, to engage in insurance and banking enterprises. The alleviation of misery was being undertaken on a more comprehensive scale than ever before. The old doctrine of *laissez faire* had at last been abandoned; and at the close of the war no argument would be left to the opponents of government-regulation and government-ownership. More than that, the misery and destruction caused by the war would call for a very considerable amount of State Socialism. In some countries, possibly, the working classes would rebel against the suffering which the government had brought upon them, would rise in arms, and bring about a social revolution. As the Paris Commune had followed upon the Franco-Prussian War, a much greater proletarian upheaval would follow upon the War of the Nations.

France. The Congress of the Unified Socialists at Amiens, January 25–28, gave evidence of the old divergence of opinion between the opportunist Jean Jaurès and the Marxian Jules Guesde. In the forthcoming elections for the Chamber of Deputies, M. Jaurès wished to coöperate with the Radicals and thus to enjoy the advantage of official support in the second balloting. Jules Guesde disliked the idea of any agreement with the bourgeois parties. The opportunist view triumphed, and the Congress adopted a carefully worded resolution which reaffirmed the absolute unwillingness of the Socialists to enter into any alliance or participate in any coalition cabinet with the bourgeois parties, but at the same time recommended the Unified Socialists on the second ballot to support the candidates of the other parties who most clearly and vigorously combated the Three Year Law, war, chauvinism, and "the military-clerical coalition." The resolution, in effect, meant combination with the Unified Radicals, whose programme consisted in anti-militarism, anti-clericalism, and fiscal reform. Against this decision of the Congress, a strenuous protest was raised by MM. Allemane, Chauvin, Nègre, and Le Gléo, who formed a "Labor Party" and issued a manifesto bitterly condemning the Unified Socialists:—"The resolution voted at the International Congress of Amsterdam, which forbade Socialists of all nations to form agreements, coalitions, or ententes with the bourgeois political parties, has been trodden under foot by the majority of the Socialist party. This majority has hypocritically concluded an electoral alliance with the most despicable and the most criminal of all political parties, the Radical party." The schism, however hurtful to party prestige, had little effect upon the elections. The first ballot gave the Socialists 1,398,771 votes, a gain of 288,210 since 1911. The large increase in the number of Socialist votes was due partly to the fact that candidates were presented even in districts where there was no chance of election, for the purpose of propaganda. The increase in the size of Paris also contributed to the Socialist gain. With the advantage of Unified Radical support in the second ballot, the representation of the Unified Socialist Party in the Chamber was increased to 101 members. At a meeting in July, the Socialist party approved the principle of an international general strike as a preventive of war. At the outbreak of the War of the Nations, as has been already stated, Jean Jaurès, the leading French Socialist, was assassinated because of his well-known anti-militarist convictions. The assassin might have spared himself the pains, however, for more strenuous opponents of militarism than M. Jaurès suddenly became patriots. Two prominent Unified Socialists, Jules Guesde and Marcel Sembat, accepted office in the cabinet. Gustave Hervé, who had once advised French soldiers to desert in case of war, now voluntarily offered to serve in the army. The Syndicalist C. G. T. (General Confederation of Labor) exhorted all trade unionists to fight for France. The anti-militarist plank in the Socialist platform had dropped out; or, rather, the French Socialists continued to regard themselves as anti-militarists inasmuch as they were fighting against German militarism.

GERMANY. To instill fresh vigor into the Socialist propaganda, and to combat the government's anti-Socialist policy (see GERMANY) the Social Democratic party instituted a "Red Week" in the spring. During that week a lively campaign was conducted, with the result that 140,096 new active members were added to the organization, 28,661 of them being women; 82,537 new subscriptions were secured for Socialist journals; and the number of dues-paying members was increased to 1,100,000. In July, Herr von Heydebrand, the leader of the Prussian Conservatives, warned the Imperial Chancellor that he must take stern measures against the Socialist menace; at the same time Rosa Luxemburg was put on trial for a subversive speech in which she had alleged that acts of cruelty and barbarity were of daily occurrence in the army. With the aid of the Socialist organization, she produced over a thousand witnesses to substantiate her apparently rash assertion. The case was dropped, but it gave *Vorwaerts*, the Socialist daily, the text for many sermons. At the end of July came the news of the Austro-Hungarian ultimatum. *Vorwaerts* warned the German government not to support the outrageous ultimatum. Mass-meetings were held in the large cities to demonstrate the desire of the German Socialists for peace. As soon as the war broke out, however, tactics were reversed. At the session of the Reichstag on August 4 Herr Haase announced that the Socialist group would vote in favor of the war budget as proof that in time of peril the Socialists would not betray their country. The German Socialists took this stand in spite of their knowledge that Belgium and Luxemburg had been invaded. Party manifestoes, and the declarations of Scheidemann, Südekum, and other Socialist leaders convinced the most incredulous observers that the German Socialists were as ardent patriots as any, fighting against Russian "Czarism." Some of the Socialist deputies fought in the army, and one at least, Herr Frank, met death in battle. A few of the Socialists were immune from the war-fever. Karl Liebknecht, with a faithful few, it appeared, had opposed the action of the majority in approving the war budget, but, bowing to the unit-rule, had voted as the majority dictated. When all the other Socialists voted for the second war loan on December 2, Karl Liebknecht alone registered his vote in the negative, declaring, "This war is not a war of German defense." "It is an imperialistic war, a war for the domination of the world market, for the political domination over important fields of operation for industrial and bank capital. It is a war mutually fostered by German and Austrian war parties in the darkness of half-absolutism and secret diplomacy in order to steal a march on the adversary." In a message to the Socialists of England, printed in the *Labor Leader* for December 31, Karl Liebknecht confirmed the impression which various statements from Rosa Luxemburg and a few other revolutionaries had created: "Among the German working people there is already a greater opposition to the war than has generally been supposed." It is an important fact that *Vorwaerts*, although twice suppressed, was allowed to continue publication and even permitted to be circulated in the army, in spite of the fact that in its columns occasional veiled hints appeared which might serve to dampen the patriotic ardor of Socialist soldiers.

GREAT BRITAIN. On December 13, as recorded in the 1913 YEAR BOOK, the executives of the British Socialist party, the Independent Labor party, and the Fabian Society met the members of the International Socialist Bureau at Clifford's Inn, London, and agreed that the representatives of the three bodies should lay before their adherents the question of asking the Labor Party Conference in 1915 to permit candidates to run for Parliament as "Labor and Socialist" representatives. The Conference also decided to hold joint meetings to promote the close alliance of the three separate Socialist organizations in Great Britain. A tripartite committee with

Mrs. Sidney Webb as chairman was appointed to arrange a series of large "unity" mass-meetings in Glasgow, Birmingham, Manchester, Cardiff, Newcastle, Leeds, and London. On January 13 the International Bureau issued a manifesto exhorting the British Socialists to unity. "At the Congress of Vienna," the manifesto urged, "British Socialism must speak with one voice." The fourth congress of the Labor party at Glasgow, beginning January 27, reproached Macdonald and the other representatives of Labor in Parliament with truckling to the Liberals and with neglecting opportunities of advertising their own programme. The Labor party put itself at variance with the International by repudiating proportional representation as entailing too great an electoral expenditure, by a vote of 1,387,000 to 704,000. British Labor and Socialist organizations protested against the deportation of strike leaders from South Africa, and held a big protest meeting in Hyde Park. Tom Mann was sent to conduct an agitation in South Africa, but little could be accomplished, owing to the complication of the South African labor question by the race question. When the War of the Nations broke out in Europe, the British Socialists endeavored to prevent Great Britain from joining in the fray. A great mass-meeting in Trafalgar Square on August 2 declared for nonintervention. But when war was actually declared, the rank and file of the Labor party, which never had been Socialist, decided to drop all opposition, and strove simply for the protection of working-class interests during the war. John Burns, "renegade" Socialist, withdrew from the cabinet, presumably because he had favored peace. J. Ramsey Macdonald resigned the leadership of the Parliamentary Labor party; but he did not undertake a crusade against the war. The Labor members and prominent trade union officials issued a manifesto in the name of the Labor movement calling for patriotic support of the motherland. The Independent Labor party, however, under the leadership of Keir Hardie, remained hostile to the war and refused to support the government. George Bernard Shaw, the satirical Fabian, penned vitriolic indictments of the British landed aristocracy, and urged the Labor party to continue its class-conscious political action despite the war; but his utterances could not be interpreted as representative of much more than his own highly individualized self.

Italy. The determination of the Socialists to hold a nation-wide demonstration against militarism and imperialism, the prohibition of the demonstration by the government, and a clash with the police, precipitated a general strike in Italy, June 8–10, which involved nearly 2,000,000 workers, caused 20 deaths, and brought some 6000 strikers into the police courts (see Strikes). The threatening aspect of the labor situation was doubtless one of the considerations, though not the most important, which deterred the Italian government from entering the war. The Italian Socialists persisted in their disapproval of the German Socialists, notwithstanding the arguments advanced by Dr. Albert Südekum, German Socialist deputy from Nuremberg, who was sent to justify the German cause in Italy. On October 25, the Italian Socialists joined with their Swiss comrades in a meeting at Lugano and declared that they would regard any attempt to involve in the war any now neutral nation as a crime against the working classes; the Lugano meeting also requested Socialists in all neutral countries to demand the opening of diplomatic negotiations for peace.

Russia. One of the Social Democrats in the Duma incurred the displeasure of the government by advocating republicanism in a speech on the floor of the Duma. When the government threatened to punish him, the Social Democrats caused a tumult which was terminated only by their forcible expulsion. In the latter half of July a general strike withdrew possibly 200,000 men from industry in the city that was then St. Petersburg, and possibly 500,000 in the country. (See Strikes). The strike speedily took on a revolutionary nature; barricades were thrown up in the capital; and on July 26 the government felt it necessary to declare a state of siege in Petrograd and Moscow. Although the threatened revolution of the working classes was averted by the patriotic outburst at the beginning of the war, the Social Democrats in the Duma opposed both war and government with unfaltering constancy. When the Belgian Socialist Vandervelde wrote, urging them to support the war against German militarism, the Russian Social Democrats (the "majority group," see 1913 Year Book) replied that they were determined to "oppose the Russian government in the interest of Russian freedom," and could on no account assist the autocratic government of the Czar to achieve the victory. A semi-official announcement late in November indicated the existence of a Socialist plot against the government and reported the arrest of five members of the Duma and several other Social Democrats.

Sweden. In the elections of March 27–April 7, the Socialists, advocating the reduction of the term of military service to six months, gained 9 seats from the Liberals, so that the Socialist fraction in the Lower House numbered 73 members. In a second election in September, the Socialists still further increased their representation to 87, again at the expense of the Liberals. The Social Democratic leader, Branting, now proposed that a working agreement or minimum programme be arranged with the Liberals, and a coalition ministry formed, in which the Social Democrats would have the preponderance. As Branting's proposition was approved by the Social Democratic Congress which met late in November, the establishment of a Socialist-Liberal ministry in place of the Conservative Cabinet was looked for in the near future. On the question of militarism, the Congress of the Swedish Social Democratic party was badly divided; but with 70 votes to 61 the Congress approved the policy enunciated by Branting, that Sweden could not disarm herself while other nations were augmenting their armaments. The best the Swedish Socialists could do, said the leader, was to limit the armament expenditures so as to leave some margin for the work of social betterment.

United States. With a certain amount of consternation Socialist sympathizers in the United States learned that the *New Review* had been barred from propagandist meetings of the Socialist party because the editor, Herman Simpson, had signalized in an editorial the fact that from June, 1912, to June, 1913, the Socialist party had lost 50,000 members or more. Another discouraging occurrence was the defeat, April 7, of the former Social Democratic mayor of Milwaukee, Emil Seidel, who was opposing he reëlection of Mayor G. A. Bading in that city. Probably the most serious obstacle to the progress of the Socialist movement was its inability to conciliate or convert the other labor movements, the American Federation of Labor and the Syndicalist Industrial Workers of the World. Striking testimony to this lack of harmony was afforded by the hearings before the Federal Commission on Industrial Relations in New York City in May, when the Socialist attitude was set forth by Morris Hillquit, the trade union method by Samuel Gompers, and the I. W. W. spirit by Vincent St. John and Joseph Ettor. With a paid-up membership of only 14,000, the . W. W. was nevertheless an active ferment in he labor world, spreading the idea of industrial warfare, and playing a prominent rôle in the Colorado miners' war and other strikes (see STRIKES, *Colorado Strike*, etc). Upton Sinclair, who picturesquely demonstrated his sympathy with the Colorado miners, upbraided Hillquit and other Socialist leaders for failing to give solid upport to the strike. Although possessing some nfluence in the American Federation of Labor, he Socialists were decidedly impatient with "the Gompers machine" and antagonistic to the Catholic element in the Federation. After the November Convention of the A. F. of L., Eugene V. Debs declared that the Socialists would do well o withdraw from this "federation of craft unions," and form a new, united, revolutionary, proletarian union. The amalgamation of the Socialist party and the Socialist Labor party was urged by a joint conference of the two parties in the State of Minnesota, April 26. In he elections on November 8 the Socialists elected Meyer London to Congress from a New York constituency. The number of Socialists in he various State Legislatures was 31, divided as follows: California, 2; Idaho, 1; Illinois, 2; Kansas, 1; Massachusetts, 1; Minnesota, 2; Montana, 2; New Mexico, 1; Nevada, 2; Oklahoma, 6; Pennsylvania, 1; Utah, 1; Wisconsin, . The total Socialist vote in 1914 was 687,495, as compared with 901,873 in 1912; the Socialist Labor party polled 30,344, as compared with 29,59 votes in 1912.

A proposed peace programme of the American Socialist party, drafted by a sub-committee of the National Executive Committee, was bitterly attacked by A. M. Simons in the New York *Call* for offering to compromise with the "hell" of militarism, and for advocating the establishment of an "international police force," which might become an effective instrument for the suppression of democratic and social revolutions. More protests were evoked by the militaristic pronouncement of the Milwaukee Socialists in favor of a "citizen army" to defend American industrial civilization against Asiatic invasion. On November 19, in a Cooper Hall speech which bids fair to become a classic, Morris Hillquit declared himself more patriot than Socialist. "If there is anything the war can teach us," he said, "it is that when national interest comes into conflict with any other, even class interest, it will be the stronger. National feeling stands for existence primarily, for the chance to earn a livelihood. It stands for everything we hold dear—homes, language, family, and friends. The workingman has a country as well as a class. Even before he has a class." For American topics affecting Socialism, see the article UNITED STATES, *passim*.

OTHER COUNTRIES. In the Australian elections on September 5, the socialistically-inclined, but highly militaristic, Labor party triumphantly elected 41 members to the House of Representatives and 31 to the Senate, thus commanding a majority in both houses (see AUSTRALIA). The Socialist party in Belgium received a gift of $1,000,000 from Ernest Solvay, the famous Belgian chemical manufacturer. In the elections on May 24 for the partial renewal of the Belgian Chamber of Deputies, the Socialists gained one seat, increasing their representation to 40. In Canada, the provincial elections in Ontario on June 29 showed 5185 Socialist votes, an increase of 1881 since Dec. 5, 1911. The Socialist party in the Netherlands was active in urging the reëstablishment of the International Bureau in their country. At a Socialist party Congress in Servia, 128 delegates listened to the remarkable speech of a comrade from Bulgaria who advocated a republican union of the two nations and boasted that in the last Bulgarian election 37 Socialists were elected. Largely as a result of the labor disturbances, the South African Labor party gained 1 seat in the Union Legislative Assembly, 21 seats in the Transvaal provincial council, 3 in the Natal provincial council, 1 in the Cape provincial council, 3 in the Bloemfontein municipal council, and 1 in the Kroonstad municipal council. In Switzerland the Social Democratic party exerted itself to prevent the further extension of the War of the Nations, and requested the Swiss President to take the initiative in peace negotiations. The question of militarism threatened to split the party into three groups.

SOCIALIST BUREAU, INTERNATIONAL. See SOCIALISM, *Great Britain*.

SOCIALIST CONGRESS, INTERNATIONAL. See SOCIALISM, *International Organization*.

SOCIAL PHILOSOPHY. See PHILOSOPHY.

SOCIAL SERVICE, AMERICAN INSTITUTE OF. An institution organized in 1898 for the object of gathering and disseminating information on all branches of social thought and service. It supplies information and advice as to methods by correspondence, by publications, and by lectures. The Institute publishes the *Gospel of the Kingdom*, devoted to studies and social reform from a Christian standpoint. The 1915 series will take up the study of the following topics: "The Social Dynamic," "Strikes and the Public," "Anarchy," "Our Courts Just or Unjust," "Prison Reform," "Municipal Home Rule," "Town and Village Betterment," "The Negro," "Profit-Sharing," "The Threat of the Orient," "The New America," "The Church's Responsibility." The president is Dr. Josiah Strong and the lecturer Dr. James H. Ecob.

SOCIETIES, ART. For exhibitions held by various societies and associations, see PAINTING AND SCULPTURE.

SOCIOLOGICAL CONGRESS, ALABAMA. The second annual session of the Alabama Sociological Congress was held at Birmingham, May 3–5. It furnished the impetus and the organized basis for four movements: a State social service committee with local branches in ten cities; a State antituberculosis campaign; a State child-welfare movement; and the creation of a negro department of the Congress in charge of negroes. The Congress also prepared the following social programme for Alabama: a workmen's compensation law; compulsory education;

improved child-labor legislation; advance of age of consent to 21 years; a State health code; anti-tuberculosis laws; equal suffrage; equitable distribution of school revenues; a probation system; a remedial loan system; and a State housing code.

SOCIOLOGICAL CONGRESS, SOUTHERN. This society held its third annual session at Memphis, Tenn., early in May. The idea of constructive statesmanship that animates the conference was shown in its motto. "The solid South for a better nation." It coöperated with the National Conference of Charities and Corrections (see CHARITIES) in arrangement of programme. This was due to the fact that the Congress usually covers such topics as public health, courts, prisons, child labor, organized charity, race relations, the church, and social service. As a result, the Congress devoted itself very largely to problems of race relations, on which addresses were given by many distinguished speakers, including Bishop Theodore Bratton of Mississippi, Booker T. Washington, Mrs. Florence Kelley, Maj. R. B. Moton of Hampton Institute, and Dr. C. V. Roman of Nashville. A rational and constructive attitude toward the condition of the negro was steadily maintained. In the department of church and social service it was brought out that in the South the church is still the most important educational and social factor in community life; and that to-day the South is facing a religious and social crisis requiring wise leadership and sane constructive progress.

SOCIOLOGICAL SOCIETY, AMERICAN. This society held its ninth annual meeting at Princeton University, Princeton, N. J., December 28–31. The general subject of the meeting was "Free Communication." At the same time and place were held sessions of the American Statistical Association and the American Economic Association. The address of President Edward A. Ross dealt with "Freedom of Communication and the Struggle for Light." Mr. John Graham Brooks read a paper on "Freedom of Assemblage in the United States since 1890," while Police Commissioner Arthur Woods of New York City treated the subject, "Reasonable Restrictions Upon Freedom of Assemblage." A session devoted to "Freedom of Speech," included papers by Prof. Roscoe Pound of the Harvard Law School and James B. Reynolds of the American Social Hygiene Association. "Freedom of the Press in the United States since 1890" was the subject of Prof. Henry Schofield of Northwestern University Law School; while Mr. Charles H. Grasty of the Baltimore *Sun* spoke on "Reasonable Restrictions Upon Freedom of the Press." In the same manner "Freedom of Teaching in the United States" by Prof. U. G. Weatherly of the Indiana University, and "Reasonable Restrictions upon the Scholar's Freedom" by President Henry Pritchett of the Carnegie Foundation, presented various aspects of freedom of teaching. There was held a joint session with the American Economic Association on the general subject, "The Relation of the State to Wages," with papers by Dr. Frank H. Dixon of Washington, D. C., and Mrs. Glendower Evans of the Massachusetts Minimum Wage Commission. See *Political Economy*, under ECONOMIC ASSOCIATION, AMERICAN.

SOCIOLOGY. Material of sociological interest will be found under many headings. Under the article LABOR are cross references to numerous topics relating to phases of the labor problem. Under SOCIAL ECONOMICS is a list of articles treating social phases of industrial life. See also CHARITIES; EUGENICS; MARRIAGE AND DIVORCE; POLITICAL ECONOMY; SOCIOLOGICAL CONGRESS, ALABAMA; SOCIOLOGICAL CONGRESS, SOUTHERN; and SOCIOLOGICAL SOCIETY, AMERICAN.

Bibliography. W. H. R. Rivers, *Kinship and Social Organization;* R. G. Gettell, *Problems in Political Evolution;* John M. Mecklin, *Democracy and Race Friction;* M. A. Aldrich, and others, *Eugenics;* B. Eames, *Principles of Eugenics, a Practical Treatise;* H. F. Secretan, *La population et les mœurs;* E. W. Capen, *Sociological Progress in Mission Lands;* C. R. Henderson, *The Cause and Cure of Crime*. See also lists under SOCIAL ECONOMICS, and POLITICAL ECONOMY, and others there referred to.

SOILS. One of the most acute economic problems at the present time is the production of an adequate food supply at a reasonable price. This is essentially and fundamentally a soil problem. It is therefore encouraging to be able to record marked progress during the past year in the study of the possibilities of soils, and the means of increasing their productive capacity.

SOIL SURVEYS. As one of the most useful means to this end, soil surveys were extended and actively prosecuted in many parts of the world. Until the outbreak of the European War, systematic soil surveys were in progress in France, Germany, and Russia, and less complete surveys were being made in Australia, Japan, and South Africa. Recently the subject has begun to receive serious attention in the Philippines and in several of the South American countries, notably Argentina and Brazil. Probably the most comprehensive work of this kind continues to be that done by the Bureau of Soils of the U. S. Department of Agriculture. Some idea of the extent and character of this work may be gained from the fact that during the fiscal year, ended June 30, 1914, detailed soil surveys were completed or begun in 90 different areas located in 29 different States, and 35,721 square miles, or 22,861,440 acres, were surveyed. Reconnoissance surveys covering 11,129 square miles, or 7,122,560 acres, were also conducted in California and Wisconsin. The total area covered by the detailed surveys up to and including June 30, 1914, amounts to 329,539 square miles, or 210,904,960 acres, and by reconnoissance surveys, 434,049 square miles, or 277,791,360 acres. The detailed surveys are made on a scale of one inch to the mile, and the reconnoissance surveys on a scale of four miles to the inch. The surveys are in great demand by those interested in agricultural development, especially in case of the many areas where peculiar conditions of soil and climate exist, and where it seems necessary to introduce new crops or new methods for successful competition in the markets of the country.

During the past year a special study was made of the fruit and truck crop soils of the United States, the purpose being ultimately to furnish a complete guide to the soils best suited to these crops, and to indicate the proper methods of handling the soils.

Classification of the lands of the National forests with a view to release of those suitable for agricultural purposes (see FORESTRY), and surveys of the lands of the various projects of the U. S. Reclamation Service with a view to their better utilization were continued.

Scientific Investigations. Soil erosion is the cause of greater injury to agricultural lands than is often realized. The U. S. Bureau of Soils finds that in some Southern States as much as 50 per cent of the arable land is lost to agriculture from this cause. Effective methods of prevention and control, based on increasing the capacity of the soil to absorb water, or decreasing the velocity of the run-off, are being worked out. The problem of prevention of wind erosion and injury by shifting sands received considerable attention during the year, especially with reference to the sand dunes along the north coast of Europe, and much progress in reducing or controling damage from this source and making such lands valuable for certain agricultural purposes is reported.

A simple method of determining the optimum water content of soils, based upon the rise of water by capillarity a short distance in a tube previously filled with dry soil, and the subsequent distribution of the water in the soil, is an important practical achievement of the Bureau of Soils during the past year.

In recent soil investigations much attention has been given to what has heretofore been considered minor or merely incidental constituents of soils, but which may prove to have an important bearing on soil fertility. For example, sulphur and manganese have been shown to be common constituents of soils, and there seems to be some direct correlation between their amount (within certain limits) and the fertility of the soil. Many of the rarer elements have been found to occur quite generally in soils, thus showing the great complexity of their mineral composition. A like complexity in the composition of the organic matter of soils is also revealed by recent investigations. The Bureau of Soils, alone, has isolated and identified more than 40 distinct compounds in the organic matter of the soil. The specific effects of these compounds on plant growth are being studied, with the result that some have been shown to be harmful while others are distinctly beneficial. Such work as this is fundamental to any correct understanding of soil fertility, replacing vague theories by definite knowledge.

Recent advances in the study of colloids have sharply emphasized the many and very intimate relations which exist between colloid bodies and the properties and processes of soils. Indeed, the great authority on colloids, Wolfgang Ostwald, declares that "soil is a conglomeration of colloids . . . soil physics is colloid chemistry."

A fact brought out by recent investigation, which may prove of great importance in the management of alkali soils, is that injurious soluble salts may be so combined that they mutually destroy each other's harmfulness. For example, C. B. Lipman has shown that it is possible "to triple and quadruple the total salt content of the soil and still make it a better medium for ammonification and nitrification than it was with one-third or one-fourth of the total salt content, consisting, however, of but one salt."

Much attention has been given recently to the matter of devising a simple and yet generally applicable system of soil classification. Several schemes of classification, one designed to be international in scope, were proposed during the year, and one of the most recent treatises on soils, that of Glinka, is largely devoted to the subject.

Bibliography. Among the more important permanent contributions to the literature relating to soils which have recently appeared are—G. André, *Chimie Agricole—Chimie du Sol* (Paris, 1913); Mitscherlich, *Bodenkunde für Land-und Forstwirte* (Berlin, 1913); Russell, *Fertility of the Soil* (Cambridge, 1913); Wahnschaffe and Schucht, *Anleitung zur wissenschaftlichen Bodenuntersuchung* (Berlin, 1914); Glinka, *Die Typen der Bodenbildung, ihre Klassifikation und geographische Verbreitung* (Berlin, 1914); Case, *Coast Sand Dunes, Sand Spits, and Sand Wastes* (London, 1914); King, *Soil Management* (New York and London, 1914). Those interested in the public lands of the United States should secure from the Superintendent of Documents, Washington, D. C., *Price List 20, The Public Domain*, which gives a list of government documents relating to these lands.

SOLAR PHYSICS. See Astronomy.

SOMALI COAST. See French Somali Coast.

SOMALILAND PROTECTORATE. A British protectorate established in 1884 under the administration of the India Office, transferred in 1898 to that of the Foreign Office, and again on April 1, 1905, to that of the Colonial Office. It lies on the Gulf of Aden, between the French and Italian dependencies, and borders on Abyssinia. The area is estimated at 68,000 square miles. Administration is limited to the coast belt. The population, mainly Mohammedan Somalis, is estimated at 300,000. They are for the most part nomadic, and grazing is the principal industry. Leading exports are hides and skins, sheep and cattle, gums, ostrich feathers, salt, ivory, and gold ingots. The imports consist mainly of rice, dates, cotton piece goods, iron, and hardware. Total imports in 1912–13, £249,529; 1911–12, £266,511; 1910–11, £267,183. Exports, 1912–13, £229,448; 1911–12, £240,036; 1910–11, £247,333. Grant-in-aid, 1912–13, £26,000. Revenue and expenditure, 1912–13, £29,913 and £60,872 respectively; 1911–12, £32,572 and £74,845. The principal towns are Berbera, Zeila, and Bulhar. Commissioner and Commander-in-chief in 1913, H. A. Byatt.

SOUTH, University of the. An institution for higher education founded in 1851 at Sewanee, Tenn. It was open for instruction in 1868. The university comprises a college of arts and sciences and a theological department, the average number of students in both departments being 160, and there are about 20 members of the faculty. The productive funds amount to about $400,000. The library contains about 35,000 volumes. The president is Albion Williamson Knight, D.D.

SOUTH AFRICA, Union of. A British colony; a legislative union, under one government, of four British provinces. The areas of the provinces, their total population, according to the census of May 7, 1911, and their total white population, are shown in the table of provinces and annexed territories below:

	Sq. m.	*Pop. 1911*	*Whites*
Cape of Good Hope ..	206,860	1,553,630	546,162
Bechuanaland	51,524	99,553	14,917
Transkeian Territories:			
East Griqualand ..	7,594	249,038	7,950
Tembuland	4,129	236,086	8,138

	Sq. m.	*Pop. 1911*	*Whites*
Transkei	2,552	188,895	2,189
Pondoland	3,906	234,687	1,888
Walfish Bay	430	687	32
Total Cape Province	276,995	2,564,965	582,877
Natal	24,866	974,487	95,994
Zululand	10,424	219,606	2,120
Total Natal	35,290	1,194,048	98,114
Transvaal	110,426	1,686,212	420,562
Orange Free State	50,389	528,174	175,189
Total Union	473,100	5,973,394	1,276,242

Of the 1,276,242 whites, 591,078 were females; of the 4,019,006 natives, 1,996,067 were females; of the 678,146 other colored inhabitants, 316,867 were females. The proportion of Europeans in the total population, in 1904, was 21.58 per cent; in 1911, 21.37 per cent. The total non-European increase, from 1904 to 1911, was 15.72 per cent. The total increase for the union, from 1904 to 1911, of all races, was 15.41 per cent; for the Cape Province, 6.44 per cent; Natal, 7.69; Transvaal, 32.78; Orange Free State, 36.37. The density per square mile was 12.63 for the union, 9.26 for the Cape Province, 33.83 for Natal, 15.27 for the Transvaal, and 10.48 for the Orange Free State. The total population, in 1904, was 5,175,824. Cape Town, the capital, had 29,863 white inhabitants in 1911; Pretoria, 29,618; Johannesburg, 119,953; Durban, 31,783; Port Elizabeth, 18,190; Woodstock, 17,957; Germiston, 15,579; Maritzburg, 14,737; Bloemfontein, 14,720; Kimberley, 13,598; Krugersdorp, 13,132; East London, 12,279; Boksburg, 11,529.

MINING. The chief source of the country's wealth is the mining industry. Gold constitutes (1912) 60 per cent of the total exports, and diamonds over 15 per cent. The export of all minerals constitutes over 83 per cent of the total exports.

Gold. The total value of the gold output of the union, in 1912, was £38,691,688. The table below shows the output by provinces in 1911 and 1912:

	Fine ozs.		£	
	1911	*1912*	*1911*	*1912*
Transvaal	8,249,461	9,107,512	35,041,485	38,686,250
Natal	1,706	1,242	7,246	5,276
Cape	73	38	310	162
Total Union	8,251,240	9,108,792	35,049,041	38,691,688

The total output from the Transvaal for 1913 was valued at £37,358,040. Employed in the gold mines in December, 1912, were 24,558 white and 207,618 colored laborers, of whom 24,520 white and 207,456 colored were engaged in the Transvaal.

Diamonds. The value of the diamond output for the year 1912 was £10,061,489. The table below shows the output by provinces in 1911 and 1912:

	Carats		£	
	1911	*1912*	*1911*	*1912*
Transvaal	1,843,341	2,131,406	1,628,876	2,386,979
Cape	2,250,506	2,325,549	5,506,412	6,190,966
O. F. S.	798,152	614,927	1,611,436	1,488,544
Total Union	4,891,999	5,071,882	8,746,724	10,061,489

The stones obtained from the Transvaal mines are greatly inferior to those from the Cape and the Orange Free State, the latter selling at from 36 *s.* to 42 *s.* per carat when Transvaal diamonds were bringing only 13 *s.* per carat. Employed in the diamond mines, in December, 1912, were 8874 white and 52,369 colored laborers.

Coal. The total value of the coal output for the union, in 1912, was £1,999,378. The table below shows the output by provinces in 1911 and 1912.

	Tons *		£	
	1911	*1912*	*1911*	*1912*
Transvaal	4,848,680	4,751,850	1,020,539	1,044,986
Natal	2,679,551	2,765,068	725,448	771,755
O. F. S.	482,690	525,459	137,616	141,380
Cape	89,028	74,701	51,550	41,257

* Metric tons.

The Transvaal produced also 2960 tons of coke, valued at £3469; and 25,895 gallons of tar, valued at £806. Natal produced 5000 tons of coke, valued at £8511. The coal mines employed, in December, 1912, 1323 white and 23,277 colored laborers.

Other Minerals. The output of silver (1,017,013 fine ounces, valued at £124,374) is contained in gold bullion and base metal ores, there being no silver mines in the union. The output of copper (1620 tons of concentrates, valued at £49,142 from the Transvaal, and 16,951 tons of matte and ore, valued at £507,836 from the Cape) for the year 1912 was valued at £556,978. The output of tin ore (2932 tons, valued at £367,699) was all from the Transvaal. The output of lime in 1912 was valued at £129,470; salt, £63,096; asbestos, £18,882.

OTHER INDUSTRIES. In spite of the three years of severe drought, agricultural development has made great progress. The re-stocking of farms visited by the recent severe outbreaks of cattle fever proceeds rapidly. Irrigation plans are being carried out on a large scale in various districts. The wool export reached, in 1912, 162,000,000 pounds, valued at £4,780,000. The export of ostrich feathers was valued at £2,600,000.

The forest reserve covers 1,843,036 acres. The present annual importation of timber into the union is about 14,000,000 cubic feet, largely pine from Europe and America, with some hard wood from Australia. The total revenue from the forest reserve, during 1911, was £90,874; expenditure, £112,815.

COMMERCE. The total value of the imports and exports in the trade of the union, exclusive of specie, is shown in the table below, for three comparative years:

	1910	*1911*	*1912*
Imports	£36,727,367	£36,925,884	£38,838,960
Exports	53,609,340	57,024,000	62,974,219

A table of the principal imports for home consumption, and exports of domestic produce, in the 1912 trade, follows, values in thousands of pounds sterling.

Imports	*1000£*	*Exports*	*1000£*
Foodstuffs	6,859	Gold	38,342
Cotton mfrs.	3,287	Diamonds	9,153
Apparel	2,799	Wool	4,781
Hardware	1,312	Feathers	2,610
Leather mfrs.	1,686	Coal	1,182
Machinery	2,689	Hides & skins	1,691
Haberdashery	1,413	Mohair	967
Iron & steel	1,872	Copper	432
Wood, etc.	1,061	Bark	283
Drugs, etc.	950	Tin ore	246
Oils	725	Whale oil	151
Furniture	712	Fish	76
Glycerine	588	Fruit	60
Woolen mfrs.	925	Fodder	45

The United Kingdom contributed 58.1 per cent of the imports and received 91.4 per cent of the exports.

During 1912, 4106 vessels, of 12,205,300 tons net, were entered, and 4080 vessels, of 12,163,081 tons, were cleared.

COMMUNICATIONS. Previous to May, 1910, the State railways of the separate colonies, now constituting provinces of the union, were operated by their several governments. On that date these lines were amalgamated into one system under the name, The South African Railways, controlled by the central government. On Dec. 31, 1913, the mileage of the government lines totaled 8281, of which 7807 miles were of 3-feet, 6-inch gauge and 474 miles of 2-foot gauge, during the year the mileage having been increased 433, or approximately 5.5 per cent. In 1913 there was carried a total of 12,402,526 tons of revenue freight, including 6,985,832 tons of coal, these being increases of 634,928 tons and 461,997 tons, respectively. Although the total tonnage thus showed an increase of 5.58 per cent, the total freight revenue decreased 2.03 per cent, mainly because of rate deductions made in 1912. The total freight revenues were $38,645,456, a decrease of $801,125, and the coal revenues were $9,206,190, a decrease of $381,725. The revenues from passenger traffic in 1913 were $16,447,173. This was an increase of $335,524 over 1912, or 2.08 per cent, but compares with increases in 1912 over 1911 of 7.47 per cent, and 1913 over 1910 of 20.07 per cent. The gross earnings for the lines operated were $60,333,237. The gross expenditures were $43,658,040, thereby leaving a surplus of $16,675,197 as compared with $21,299,836 in 1912, and $23,803,094 in 1911. The operating ratio was thus 72.36 per cent as compared with 64.97 per cent in 1913. The capital expenditure during the year being $408,032,190, or $48,856 per mile. The report states that when all the lines under construction at present are completed, the mileage operated by the South African Railways will be approximately 9318 miles.

The first train on the line from Prieska to Upington, ran over the road on November 16, and signified the completion of a rapid track-laying record. On September 9 track-laying on this line, 142 miles in length, was begun, and the entire work was completed in 68 days, a record, which though less than that held in the western United States, was the best to date for African railway construction. The line follows the Orange River almost its entire length, with very little earthwork to be done, and but three small water courses to be bridged. This line was constructed in order to facilitate the conduct of military operations in German Southwest Africa, and it was expected that the line would be extended to Kalfontein, the Germain railhead, for strategic reasons. The present terminus, Upington, is about 80 miles as the crow flies from the southeastern extremity of German Southwest Africa, and about twice that distance from the German railhead.

At the end of 1912 there were 15,236 miles of telegraph line, with 56,860 miles of wire. Telephone lines, 54,997 miles. Post and telegraph offices, 2644.

FINANCE AND GOVERNMENT. In the table below are shown revenue and expenditure for three comparative years:

	1911-12	*1912-13*	*1913-14*
Revenue	£17,284,847	£17,465,573	£15,889,000
Expenditure ..	16,603,693	17,204,126	16,419,264

The total public debt stood, March 31, 1912, at £117,769,676.

Viscount Gladstone of Lanark was Governor-General in the beginning of 1914, being succeeded later in the year by Viscount Buxton, who was assisted by the following Executive Council: Gen. L. Botha, Premier and Minister for Native Affairs; Gen. J. C. Smuts, finance and defense; Capt. H. Burton, railways and ports; N. J. de Wet, justice; Capt. H. C. van Heerden, agriculture; Capt. F. S. Malan, mines and instruction; * * *, interior; Sir Thomas Watt, public works, post, and telegraph; H. S. Theron, public lands; and Capt. J. A. C. Graaff, without portfolio. For other information, see articles under separate provinces.

HISTORY

DEPORTATION OF STRIKE LEADERS. Again in 1914 the Rand (or Witwatersrand, the famous gold-mining region in the Transvaal) was the scene of serious industrial disturbances (which will receive further treatment in the separate article on STRIKES) and the storm-centre of South African politics. A strike in this congested industrial community had been attended by bloody rioting on the terrible night of July 4, 1913, in Johannesburg, and had been terminated by the prompt intervention of the union government with martial law in one hand, and in the other promises to reinstate the strikers, to investigate their grievances, and to compensate the strike-breakers. But the situation still remained tense: the trade-unionists felt bitter resentment, and the Trades Federation still entertained the idea that by a sudden general strike it could bring the government to its knees. The signal for reopening the conflict was the decision of the government to carry out a policy of retrenchment in the administration of the State-owned railways, and to begin its economies by laying off some 70 railway-workers. On Jan. 7, 1914, a meeting of railway-workers was held at Pretoria; a railway strike was inaugurated the following day; and the strikers demanded the reinstatement of their 70 discharged fellow-workers. Instead of yielding, the government still further angered the strikers by giving protection to "scabs" and by arresting a number of strike leaders. By this time the Syndicalists in the Federation of Trades were so thoroughly excited that they issued the call for a general strike, January 13. Immediately the government proclaimed martial law, and mobilized 70,000 soldiers of the militia or Defense Forces; the strikers therefore found strong police guards everywhere, armed men watching the mines, and angry Boer militiamen patrolling the streets of Johannesburg. On January 16, a force of perhaps 5000 men surrounded the Johannesburg Trades Hall, a field gun was trained on the building, and the unarmed strike leaders within, composing the Executive Committee of the Trades Federation, were forced to surrender and escorted to jail by soldiers with fixed bayonets. Without leaders, the strike collapsed on January 22.

In its unhesitating and eminently successful efforts to prevent the advent of a new era of industrial anarchy in the Transvaal, the union government would have been generally commended by the middle classes, had it not committed one grave error, the deportation of the strike-leaders. At midnight on January 26, several days after all danger of an industrial crisis was past, nine of the most notorious labor agitators, who had been imprisoned at Johannesburg, were awakened from sleep, hustled aboard a train for Durban, and quietly but forcibly placed aboard the steamship *Umgeni*. Despite their protests, and disregarding their demand for a legal trial, the unfortunate nine were conveyed by the *Umgeni* to London.

Full opportunity for discussing the incident was given when on January 30 the South African Parliament was opened and (February 2) General Smuts introduced an Indemnity Bill exempting the public officials from punishment for any illegalities committed by them in suppressing the strike; there was also a clause declaring that the nine deported men should not be allowed to reënter the union. There had been a malign conspiracy of the Syndicalists, General Smuts declared, to terrorize the country; yet technically there was no law under which these criminals could be adequately punished; the government had therefore taken the law into its own hands in deporting the most dangerous conspirators without trial. This, however, constituted an alarming precedent for governmental interference with private liberties, and if it was admitted in principle that the government could deport citizens arbitrarily, the road would be clear to despotism. Such at least was the view of the ministry's critics. Mr. Creswell, the Labor leader, who had himself been imprisoned for promoting disaffection, not only denied that a conspiracy of the Syndicalists had existed, but went on to allege that the government had conspired with the mine-owners against the rights of labor, and that Gen. Louis Botha, the Boer Premier who had wielded arbitrary power in protecting the mine-owners, might well be called "Louis the First, By the Grace of God, Defender of the Mine Owners." But the majority in Parliament and the bulk of the middle classes in the country, while they were more or less disquieted by the deportations, were inclined to support the government, inasmuch as they believed the strike to have been caused by a small band of desperate Syndicalists, who tyrannized over the fairly well-paid white minority of workers on the Rand, and did not at all represent the needs of the real laboring class—the negroes. Moreover, there were a quarter of a million negro laborers in the Rand region, who might follow the lawless example of their white fellow-workmen; and insubordination of the great masses of subject negroes in South Africa, as well as in Britain's other African territories, might be the awful result of unchecked Syndicalist insurrections in the Transvaal. Probably it was this haunting spectre of a native uprising which induced the Parliament more readily to acquiesce in the deeds of a government which was at any rate firm in upholding order, if not exactly scrupulous about law. Consequently the Indemnity Bill was passed on third reading on March 10, and received the assent of the Governor-General nine days later. In the Transvaal, however, the incident tended to strengthen the Labor party, as was shown by the election of a Labor majority to the Transvaal Provincial Council. In passing, it is interesting to note that the newly elected Labor majority in the Transvaal Council, being unable to control the policy of the Administrator and his executive, attempted to transfer his powers to select committees of the Council by ordinances which were subsequently disallowed under the South African Act as *ultra vires*.

Meanwhile Imperial complications developed. The nine deported workingmen, arriving off Gravesend, England, on February 24, were received with open arms by their Laborite sympathizers in the mother country. Their recital of General Botha's misdeeds aroused such indignation that a huge mass meeting in Hyde Park on March 1, and Socialist meetings in other British cities, voiced a vehement protest against the harsh policy of the South African government as well as against the indifference of Mr. Asquith's ministry in refusing to intervene. The Imperial government, it must be remembered, possessing the constitutional right to disallow any bill of the Union Parliament, might constitutionally have vetoed the Indemnity Bill and protected the deported strikers. But in so doing, the Imperial government might have angered General Botha, who by resigning would throw the South African government out of gear. Therefore nothing was done; although the announcement in February that Sydney Buxton, an energetic Liberal, hitherto on the Board of Trade, would succeed Lord Gladstone as Governor-General of South Africa, was taken in some quarters to indicate a rebuke to the stern industrial policies of the government with which Lord Gladstone as Governor-General had been connected.

UNION PARLIAMENT AND LABOR. Owing chiefly to the controversy over the deportations, the session of the Union Parliament, which lasted from January 30 to July 7, was the longest in the history of the union, despite the introduction of the closure as a means to expedite parliamentary procedure. Besides the budget, which involved important tariff changes and proposals for the taxation of incomes and undeveloped lands, the session was mostly concerned with measures affecting industrial conditions. The Indemnity Bill has been sufficiently discussed. A Peace Preservation Bill, endowing the government with the most sweeping powers for the suppression of industrial disorders, was so violently assailed that for it a somewhat milder Riotous Assemblies Bill was substituted and passed, which latter prohibited all forms of "peaceful picketing," penalized the intimidation of workingmen, and provided penalties for persons who broke their contract of employment in the public utilities. The act also empowered the government to deport any persons convicted of high treason, sedition, or public violence. With the intention of punishing the men who went out on strike in January, the government introduced a Railways Strike Bill, assigning modest rewards to the employees who had held aloof from the strike, and imposing rather heavy fines on those who had participated; owing to the pressure of public opinion, however, the fines had to be abandoned. It remains to mention several measures which were designed to alleviate some of the grave industrial maladies of which strikes and riots were symptomatic. Late in 1913, in fulfillment of its promise given to the labor delegates in July, 1913, the ministry had published a number of bills which it proposed to bring in the following year—bills dealing with Workmen's Compensation, Factories, Industrial Disputes, and Trade Unions. But when the time came to open the parliamentary session of 1914, the ministry announced that these measures would be shelved, inasmuch as "the country has been profoundly stirred by the recent disorders (the January strike), and the feelings which have been aroused must be allowed to subside before the problems which have presented themselves as the outcome of these events can be calmly reviewed and wisely dealt with." But as the anticipatedly short session lengthened out, and the Opposition became increasingly insistent, General Botha's cabinet finally consented to bring up for consideration (1) a bill regarding Industrial Disputes and Trade Unions, (2) a Workmen's Compensation Bill. The former bill, which provided for compulsory investigation of industrial disputes and established commissioners for conciliation, was opposed by the Laborites because it restricted the liberty of striking, and was lost in the congestion of business at the close of the session. The second bill was successfully passed. Frankly following the form of the English Act of 1906, and adopting the scale of compensation in vogue in the Transvaal, the Workmen's Compensation Act supplemented and consolidated the defective and variant compensation laws of the several provinces, and made it possible for practically all classes of labor (except domestic and agricultural workers not in charge of machinery) to claim legal compensation for industrial accidents. Another sorely needed measure was the Workmen's Wages Protection Act, borrowed from West Australia, which made his workmen's wages the first charge upon the moneys received by any contractor for building or other work. Nor must we forget the Amending Bill which was passed late in the session to supplement the Miners' Phthisis Act of 1912: men who worked at stone crushing machines above ground were now included as "miners"; native miners, who frequently succumb to the dread disease unawares, were to be compulsorily examined by medical inspectors twice a year; and the maximum compensation payable to a miner in the first stages of consumption was increased from the insufficient £96 to a more generous £200.

Settlement of the Indian Question. By relieving the grievances of the resentful Indian immigrants, the South African government removed a most serious cause of discontent. In accordance with the report of the Solomon commission (consult 1913 Year Book, p. 644), which was published March 17, 1914, the ministry put through an Indians Relief bill (1) to repeal the £3 tax on ex-indentured Indians in Natal, and (2) to give legal status to the *de facto* monogamous marriages of Indian immigrants, although such marriages were solemnized according to the rite of a religion which sanctioned polygamy. Some of the Mohammedans thought the marriage provisions too restrictive, but the preponderant mass of Indian communities both in South Africa and India were inclined to accept these concessions as a definite settlement, especially after General Smuts publicly promised to adopt a conciliatory policy in administering the laws, on condition that they should "constitute a complete and final settlement of the controversy . . . and be accepted as such by the Indian community." Mr. Ghandi, who led the "passive resistance" movement last year, declared that the Indians still remained under serious disabilities with regard to rights of trade, residence, and land ownership, and was certain that "complete satisfaction cannot be expected until full civic rights have been conceded to the resident Indian community." Nevertheless he accepted the settlement as a basis for amicable relations, and, as if to signalize the fulfillment of his mission in South Africa, Mr. Ghandi returned to India amidst the plaudits of his race.

Boer Revolt. The resentment which the Boers were supposed still to cherish against their British conquerors, and the prevalence of acute industrial unrest as evidenced in the recent strikes, afforded some foundation for the belief that in the War of the Nations, South Africa would either be positively disloyal to the British Empire, or at least would be prevented by intestine strife from furnishing aid to the mother country. For a time the actual course of events bade fair to challenge this pessimistic conclusion. Premier Botha, who had once borne arms against Great Britain, pledged his unfaltering loyalty, September 10. Three days later the Union Parliament confirmed the assurance of South Africa's intention to stand by the Empire. The Imperial troops were withdrawn, and the Defense Forces of the Union left in charge. South African troops were sent to invade German South West Africa and occupied Lüderitz Bay, September 19. The first alarming symptom was the resignation, on September 21, of Brig.-Gen. Christian F. Beyers, commanding general of the Union, because he disapproved of the attack on the German colony. But General Botha, assuming command in person, continued the campaign. In October the standard of revolt was raised by Lieut.-Col. Solomon G. Maritz in the northwest corner of Cape Province. Eighty of his men were captured on October 15; 73 more on October 19; on October 22 Maritz was repulsed in an attack on Keimos; and on October 26 the government announced that he had been driven in defeat across the border into German territory. The following day, the government regretfully reported the rise of a far more serious rebellion. General Christian de Wet, who had commanded the Free State forces in the South African War, called on his followers in the north of Orange Free State to rise against the government; simultaneously a rebellion was begun in the Transvaal by Gen. Christian Beyers, another of the Boer leaders who had played a conspicuous rôle in the war of the Boers against Great Britain (1899–1902), and had recently resigned the chief command of the Citizen Defense Forces of the Union. The Boers who once had fought so stubbornly to preserve their independence against Great Britain were now arrayed on opposite sides, some supporting General Botha's attitude of loyalty to the Empire, and a minority sympathizing with the rebellion. Reports from English sources gave General Botha credit for a series of victories; on October 28 he captured 80 of Beyers' men; on October 29, 124 rebels surrendered, and on October 30, 100. On November 1 the rebels were defeated in Lichtenburg district of the Transvaal, losing 13 killed, 30 wounded, and 240 captured. On November 6

General Muller, another rebel, lost 58 men in a defeat at Bronkhorstspruit, 34 miles east of Pretoria. On November 8 General Beyers lost 364 men in an engagement southeast of Bloemhof. On November 8 a mixed force of Germans and Boers was defeated at Zandfontein in German Southwest Africa with a loss of 120 killed and wounded and 25 captured. On November 12 General Botha defeated De Wet, 24 miles east of Winburg (Orange Free State) and made 250 prisoners. A week later General Botha was able to report that De Wet's forces were being rapidly dispersed. De Wet himself was captured on December 1, near Mafeking and imprisoned in the fort at Johannesburg. General Beyers was shot a few days later, while fording the Vaal River. On December 10, the Premier announced that since the capture on December 4 of 700 rebels and the surrender of 200 more, five rebel leaders had capitulated and only one—Colonel Maritz—remained at large. On December 22, the Minister of Justice declared that 4000 ex-rebels were now in prison, and 1000 on parole. The rebellion was not completely crushed, however, for on December 22, Colonel Maritz reappeared at the head of 800 men and defeated the union forces at Schnitdrift, taking 90 prisoners. See STRIKES; WAR OF THE NATIONS.

SOUTH AMERICA. See various South American countries, also EXPLORATION, *South America*.

SOUTH AUSTRALIA. A State of the Commonwealth of Australia. The estimated area is 380,070 square miles. The census of April 3, 1911, returned a population of 408,558, exclusive of full-blooded aboriginals; estimate of Dec. 31, 1912, 430,090. The capital is Adelaide, whose population, with suburbs, was 189,646 in 1911.

According to the annual report of the Railway Administration for South Australia, the mileage of State railways on June 30, 1914, was 1845; of this 1052 miles were of 3-foot, 6-inch gauge, or 85 miles more than on June 30, 1914, and 793 miles were of 5-foot, 3-inch gauge, 70 miles having been added during the year. There are authorized or in course of construction 463 miles. Also, under agreement with the Australian government, an additional 478 miles of 3-foot, 6-inch gauge railway are operated from Port Augusta north to Oodnadatta almost on the Northern Territory line. The total earnings, for the fiscal year ended June 30, 1914, exclusive of the branch which is mentioned, were $11,349,040, of which $3,657,067 was passenger train revenue, $7,456,149 freight train revenue, including $3,125,649 for the transportation of minerals, and $245,775 of miscellaneous revenue. In all items of traffic except wheat and live stock an increase over 1913 was shown, and the total earnings, $558,001 greater, constituted a new record, while there was also an increase in total expenditures. The net revenue $4,042,772 was equal to 5.33 per cent on a capital expenditure of $75,812,740 on average mileage open. From this net revenue there were deducted interest charges of $2,753,175 chargeable to the railways by the government rate of 3⅞ per cent. The South Australian railways in 1914 carried 19,809,533 passengers, an average distance of 11.95 miles. The total revenue freight tonnage was 15,082,769, and the total earnings per mile were $6250.

In March, 1914, Admiral Sir Day Bosanquet, who had been Governor of South Australia since March, 1909, was succeeded by Lieut.-Col. Sir Henry Lionel Galway. Lieutenant-Governor (from 1891) and Chief Justice, Sir Samuel James Way; Premier (from February, 1912), Archibald Henry Peake. In the parliamentary session which opened on July 6, 1914, no important business was transacted other than the enactment of such measures as price regulation which are customary in war time. See AUSTRALIA.

SOUTH CAROLINA. POPULATION. The estimated population on July 1, 1914, was 1,590,015. The population in 1910 was 1,515,400.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	1,975,000	36,538,000	$33,615,000
	1913	1,975,000	38,512,000	37,857,000
Wheat	1914	80,000	920,000	1,334,000
	1913	79,000	972,000	1,264,000
Oats	1914	375,000	7,500,000	5,325,000
	1913	360,000	8,460,000	6,007,000
Rice	1914	6,900	179,000	165,000
	1913	4,900	147,000	132,000
Potatoes	1914	11,000	770,000	962,000
	1913	10,000	800,000	1,040,000
Hay	1914	210,000	*a* 242,000	4,114,000
	1913	210,000	244,000	4,563,000
Tobacco	1914	50,000	*b* 36,500,000	3,540,000
	1913	43,800	33,238,000	4,594,000
Cotton	1914	2,800,000	*c* 1,500,000	49,411,000
	1913	2,790,000	1,378,000	88,541,000

a Tons.
b Pounds.
c Bales.

MINERAL PRODUCTION. Up to the close of 1911 the most important mining industry in the State was that of phosphate rock. In 1912, owing to a decrease in the production of this material and an increase in the value of the clay products, the phosphate-mining industry gave way to clay working as first in rank. The production of phosphate rock continued to decrease in 1913, and although there was also a decrease in the value of the clay products, the latter still maintains first place. In 1913 the production of phosphate rock was 109,333 long tons, valued at $440,588, a decrease of 22,157 long tons, and of $84,172 over 1912. The clay products in 1913 were valued at $583,241, compared with $704,563 in 1912. South Carolina is one of the four States which produces a peculiar quality of clay used in the paper trade and known as "paper clay," and the production of this clay in 1913 was 31,568 tons, valued at $120,520. South Carolina is one of two States, North Carolina being the other, in which monazite has been produced in commercial quantities, but since 1910, on account of the heavy importations from Brazil, the production in both States has practically ceased. The mining of gold in South Carolina, once of some considerable importance, has now almost entirely ceased, as in 1913 there was produced but 236 fine ounces, valued at $4881. Other commercial substances produced are barytes, fuller's earth, occasional gems, lime, manganese ore, mica, mineral waters, sand and gravel, silver, stone, and tin. The total value of the mineral products decreased from $1,606,989 in 1912 to $1,464,150 in 1913.

FINANCE. The report of the State Treasurer for the fiscal year 1914, shows a balance on hand Dec. 31, 1913, of $738,634. The total receipts for the period amounted to $3,128,557 and the total expenditures to $3,514,472, leaving a cash balance on Dec. 31, 1914, of $352,718. The public debt of the State on Dec. 31, 1914, amounted to $5,675,851.

Charities and Corrections. The charitable and correctional institutions under the control of the State include the South Carolina Industrial School for White Boys at Florence; South Carolina Institute for the Deaf, Dumb, and Blind at Cedar Springs; the Penitentiary at Columbia; and the Hospital for the Insane at Columbia.

Education. There were enrolled in the public schools of the State in 1913, 361,161 pupils. Of these, white pupils numbered 167,914 and colored 193,247, the average daily attendance of white pupils being 110,148 and of colored 128,020, or for both 238,168. The white women teachers numbered 3807 and the white male teachers 777. Of colored female teachers there were 2101, and of colored male teachers 773. The average salary for white male teachers was $530.28, and for white women teachers $302.48, while for colored teachers the average yearly salary for male teachers was $126.87, and for women, $123.90.

Transportation. The total miles of all tracks in South Carolina on June 30, 1914, was 4594, and of this about 185 miles were electric railways. There were constructed during the year about 26 miles of steam railroad and 31 miles of electric interurban lines. The roads having the longest mileage in the State are the Southern Railway, 1472; Atlantic Coast Line Railroad, 1158; Seaboard Air Line Railway, 446; Charleston and Western Railway, 389; and the Carolina, Atlantic, and Western Railway, 208.

Politics and Government. The State Legislature met in its annual session in 1914, but the measures passed were chiefly of local interest and importance. Elections were held during the year for Governor and State officers, representatives in Congress, and United States Senator. Senator Ellison D. Smith, whose term expired on March 4, 1915, was a candidate for reëlection, having for his opponent Governor Blease. After an unusually bitter campaign, Senator Smith was, in the primaries held on August 25, renominated. On September 8, a second primary was held to nominate a Governor, and Richard I. Manning was successful in receiving the Democratic nomination, which, in South Carolina, is equivalent to an election. His only opponent was the Socialist candidate, R. B. Britton. In the elections of November 3, Mr. Manning was elected Governor by 34,606 votes, the Socialist candidate receiving only 83 votes. Senator Smith was elected Senator with practically no opposition. The total vote cast in this election was 34,689, compared with a vote of 50,348 in the presidential election of 1912. There was no particular significance in the falling off of the vote as the Democratic party is practically the only one in the State. Governor Blease continued the notoriety, which followed him throughout his term, by his wordy wars with the Legislature and by the wholesale pardoning of State prisoners. At the expiration of his term he had set free more than 3000 prisoners as a protest against the prison laws of the State.

State Government, 1915. Governor, Richard I. Manning; Lieutenant-Governor, Andrew J. Betha; Secretary of State, R. M. McCown; Attorney-General, Thos. H. Peeples; Treasurer, S. T. Carter; Comptroller-General, A. W. Jones; Superintendent of Education, John E. Swearingen; Adjutant-General, W. W. Moore; Commissioner of Agriculture, E. J. Watson; Commissioner of Insurance, F. H. McMaster—all Democrats.

Judiciary. Supreme Court: Chief Justice, Eugene B. Gary; Justices, D. E. Hydrick, R. C. Watts, Thos. B. Fraser, and Geo. W. Gage; Clerk, U. R. Brooks—all Democrats.

State Legislature, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	44	124	168

The representatives in Congress will be found in the article United States, section *Congress.*

SOUTH DAKOTA. **Population.** The estimated population on July 1, 1914, was 661,583. The population in 1910 was 583,888.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	3,000,000	78,000,000	$39,000,000
	1913	2,640,000	56,820,000	37,699,000
Wheat	1914	3,469,000	31,566,000	29,672,000
	1913	3,775,000	33,975,000	24,122,000
Oats	1914	1,606,000	44,165,000	16,783,000
	1913	1,590,000	42,185,000	14,826,000
Rye	1914	60,000	1,020,000	796,000
	1913	50,000	660,000	330,000
Barley	1914	850,000	19,550,000	9,775,000
	1913	958,000	16,765,000	7,712,000
Potatoes ...	1914	68,000	5,670,000	2,665,000
	1913	60,000	4,680,000	2,948,000
Hay	1914	500,000	[a] 850,000	4,845,000
	1913	460,000	552,000	3,588,000

[a] Tons.

Mineral Production. Gold is practically the only mineral of importance produced in South Dakota, the greater part of it coming from the Homestake mine. The mine production in 1913 was valued at $7,319,294, which was $572,076 less than the record yield of $7,891,370 in 1912. The silver production fell from 206,460 ounces in 1912, to 172,702 ounces in 1913. The production of gold from the mines of the State in 1914, according to the estimates of the United States Geological Survey, was $7,270,000, compared with $7,319,294 in 1913. The production of silver was approximately 174,000 ounces, compared with 172,702 ounces in 1913. A nominal quantity of lead and copper was produced. The total value of the mineral products of South Dakota in 1913 was $7,888,411, compared with $8,436,240 in 1912.

Finance. The report of the State Treasurer shows cash on hand on July 1, 1913, amounting to $925,135. The total receipts for the year amounted to $4,337,928, and the disbursements to $4,444,939, leaving cash on hand, June 30, 1914, amounting to $818,123.

Transportation. The total railway mileage in the State in 1914 was 4240, about 30 miles of new road being constructed during the year. The roads having the longest mileage are the Chicago, Milwaukee and St. Paul, 1794; Chicago and North Western, 1063; Milwaukee and St. Louis, 269; and the Great Northern, 262.

Education. The total school population of rural districts on June 30, 1914, was 119,012;

in independent districts there were 51,862. The total enrollment of pupils below high school grade was 87,206 for the rural districts and 33,521 for independent districts. In the high schools there were enrolled in the rural districts 1680 and in the independent districts 8405. The average monthly salary of male teachers in the rural districts was $56.55 and of female teachers $51.08. In the independent districts the average monthly salary for male teachers was $108.35 and for female teachers $63.41. The total number of schoolhouses in the rural districts was 4943 and in the independent districts 274. The expenditure for the school year in the rural districts was $3,209,892 and in the independent districts $2,203,171.

CHARITIES AND CORRECTIONS. The institutions under the control of the State Board of Charities and Corrections include the Penitentiary and State School for Deaf Mutes at Sioux Falls, State Training School at Plankington, State Hospital for the Insane at Yankton, State School for the Blind at Gary, State School and Home for the Feeble-Minded at Redfield, and the State Tuberculosis Sanatorium at Custer.

POLITICS AND GOVERNMENT. The Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for Governor and for United States Senator. Governor Byrne, Republican, was a candidate for renomination, and Senator Crawford, whose term expired on March 4, 1915, was also a candidate to succeed himself in the Senate, being opposed by C. H. Burke, a member of Congress. Nominating elections were held on March 24, and Governor Byrne was renominated, but Senator Crawford was defeated for the nomination by Mr. Burke, the Democratic nominee for Senator being E. S. Johnson. In the elections of November 3, Governor Byrne was reëlected, receiving 49,138 votes, compared with 34,542 for McCarter, Democrat, and 9725 for Richards, Independent. The Democratic candidate for the Senate, Mr. Johnson, was elected, receiving 48,076 votes, compared with 44,244 for Burke, Republican, and 2674 for E. P. Johnson, Socialist. The total vote cast in the election was 981,141, compared with 116,325 in the presidential election of 1912. Comparisons, however, are not possible because there were no Republican electors voted for in 1912, and the Progressives had no nominees in 1914. The Republicans elected representatives in all three districts of the State.

STATE GOVERNMENT, 1915. Governor, Frank M. Byrne; Lieutenant-Governor, Peter Norbeck; Secretary of State, Frank M. Rood; Treasurer, A. W. Ewert; Superintendent Instruction, Chas. H. Lugg; State Land Commissioner, Fred. Hepperle; Attorney-General, C. C. Caldwell; State Auditor, J. E. Handlin—all Republicans.

JUDICIARY. Supreme Court: Presiding Judge, James H. McCoy; Justices, Charles S. Whiting, John Howard Gates, Samuel C. Polley and —— —— —all Republicans.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	34	80	114
Democrats	11	20	31
Republican majority	23	60	83

The representatives in Congress will be found in the article UNITED STATES, section *Congress*.

SOUTH DAKOTA, UNIVERSITY OF. A State university of higher education, founded at Vermilion in 1882. The number of students enrolled in the several departments of the university in the autumn of 1914 was 400, and the faculty numbered 50. There were no notable changes in the faculty during the year and no noteworthy benefactions were received. The annual income of the university is $130,500, most of which is derived from the State Legislature. The library contains about 20,500 volumes. The president is Franklin P. Gault, Ph.D.

SOUTHERN NIGERIA. See NIGERIA.

SOUTHERN SOCIOLOGICAL CONGRESS. See SOCIOLOGICAL CONGRESS, SOUTHERN.

SOUTH GEORGIA. Island dependencies of the Falkland Islands (q.v.).

SOUTH ORKNEY ISLANDS. A dependency of the Falkland Islands (q.v.).

SOUTH POLE. See POLAR RESEARCH, *Antarctic*.

SPAIN. A constitutional European monarchy, occupying the eastern part of the Iberian Peninsula. Capital, Madrid.

AREA AND POPULATION. The Spanish provinces, with their area in square kilometers and population according to the census of Dec. 31, 1910, are as follows:

	Sq. km.	*Pop.*
Alava	3,045	96,998
Albacete	14,863	264,368
Alicante	5,660	497,616
Almería	8,704	365,016
Avila	7,882	208,817
Badajoz	21,894	564,131
Baleares	5,014	326,023
Barcelona	7,691	1,141,626
Biscaya	2,165	349,969
Burgos	14,196	347,694
Cáceres	19,868	395,499
Cádiz *	7,342	470,068
Canarias	7,273	447,688
Castellón	6,465	322,210
Ciudad-Real	19,608	380,565
Córdoba	13,727	498,782
Coruña	7,903	674,880
Cuenca	17,193	269,684
Gerona	5,865	319,679
Granada	12,768	522,517
Guadalajara	12,113	209,352
Guipúzcoa	1,885	226,885
Huelva	10,138	309,672
Huesca	15,149	248,257
Jaén	13,480	532,368
León	15,377	395,430
Lérida	12,151	284,974
Logroño	5,041	188,235
Lugo	9,881	477,239
Madrid	7,989	877,819
Málaga	7,339	523,429
Murcia	11,537	607,786
Navarra	10,506	312,235
Orense	6,979	411,573
Oviedo	10,895	685,131
Palencia	8,434	196,031
Pontevedra	4,391	496,292
Salamanca	12,510	330,688
Santander	5,460	303,152
Saragossa	17,424	448,995
Segovia	6,827	167,744
Seville	14,062	597,194
Soria	10,318	156,354
Tarragona	6,490	334,535
Teruel	14,818	254,998
Toledo	15,257	413,648
Valencia	10,751	884,298
Valladolid	7,569	285,211
Zamora	10,615	273,045
Total	504,517 †	19,611,334

* With Ceuta.
† 194,794 square miles.

The greatest density per square kilometer is found in Biscaya—162, and the least density in

Huesca and Cuenca, with 16; the mean density for the kingdom is 40. The number of marriages in 1912 was 142,897, births 637,901, and deaths 426,269. Emigrants in 1912, 194,443—147,640 to Argentina, 29,386 to Cuba, and 9641 to Brazil. According to the census of 1910, the communal population of Madrid was 599,887, Barcelona 587,411, Valencia 233,348, Seville 158,287, Málaga 136,365, Murcia, 125,957, Saragossa 111,704, Carthagena 102,519, Bilbao 93,536, Granada 80,511, Lorca 72,795, Valladolid 71,066, Palma (Baleares) 67,544, Cádiz 67,174, Córdoba 66,004, Jerez de la Frontera 61,250, Las Palmas 60,338, Alicante 55,300, Gijón 55,088, Oviedo 53,269, Badajoz 35,039.

Production. The soil is fertile, but 60 per cent of the area is uncultivated, though 79.65 per cent is returned as "productive." Tropical fruits thrive, and Spain is the second largest producer of olives in the world, Italy ranking first. The vine is grown in all the provinces, sherry and tent wines coming from Jerez, malaga and alicante from the southeast. In the table below are shown areas under main crops and yield in metric quintals for two years (figures for 1913–14 subject to revision), with yield per hectare in 1912–13:

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*ha.*
Wheat	3,902,925	3,904,169	30,590,794	32,744,173	7.8
Rye	776,172	766,273	7,091,144	7,869,348	9.1
Barley	1,565,940	1,335,470	14,973,469	16,045,786	9.6
Oats	546,682	512,700	3,677,145	4,437,681	6.7
Corn	447,181	447,000	6,385,806	7,276,716	14.3
Rice	38,820	39,000	2,228,803	1,995,360	57.4
Flax *	768	650	4,750	....	6.2
Beets	43,100	35,000	10,800,000	....	250.6
Vines †	1,250,160	1,250,160	17,105,203	16,909,603	13.7
Olives †	1,452,838	1,453,000	2,654,225	....	....

* Fibre. † Production in hectoliters.

Live stock in 1912 numbered 525,853 horses, 928,920 mules, 829,410 asses, 2,561,894 cattle, 15,829,954 sheep, 3,116,226 goats, 2,571,359 swine. Sericulture is carried on in Valencia, Murcia, and other provinces.

The mining industries in 1911 employed 112,142 male and 5361 female workers, of whom 15,821 were boys and 1706 girls under 18 years of age. Amount of copper output 1911, 3,284,184 metric tons valued at 35,654,223 pesetas; iron, 8,773,691 tons and 47,599,172 pesetas; coal, 3,454,394 and 47,690,363; lead, 163,843 and 27,620,683; argentiferous lead, 156,569 and 24,575,689; mercury, 19,940 and 3,527,003; zinc, 162,140 and 6,742,493; anthracite, 209,227 and 3,321,092; lignite, 252,051 and 3,057,237, etc.

There are factories for the manufacture of cotton goods, woolen goods, paper, glass, corks, etc. The value of the fisheries products is estimated at about 60,000,000 pesetas annually.

Commerce and Communication. Imports for home consumption and exports of domestic produce are given in the table below for three years in pesetas:

	1910	*1911*	*1912*
Imports	1,000,036,564	993,632,288	1,140,651,000
Exports	970,519,855	961,969,810	1,145,992,000

Imports and exports for 1912 are given as 1,140,651,000 and 1,145,992,000 pesetas respectively; for 1913, special trade, as 1,173,105,000 and 1,078,350,000. The details by principal countries of origin and destination in 1911 and 1912 are shown in the table below in thousands of pesetas:

	Imports		*Exports*	
	1911	*1912*	*1911*	*1912*
United Kingdom	168,422	200,585	286,512	286,229
France	164,351	182,958	280,707	257,681
Germany	128,521	133,329	61,044	74,389
United States	129,662	155,232	57,812	67,312
Cuba	1,798	8,451	54,547	63,648
Porto Rico	6,000	6,664	8,587	8,057
Philippine Islands	14,825	18,993	6,729	8,430
Morocco	6,181	5,822	4,821	6,178

There were entered at the ports in the 1912 trade 21,711 vessels, of 22,668,000 tons, and in 1913, 22,296 vessels, of 25,403,827 tons; cleared, 1912, 19,051, of 22,045,000 tons, and 1913, 19,185 vessels, of 23,942,643 tons. The merchant marine included Jan. 1, 1913, 596 steamers, of 761,281 tons net, and 301 sailing vessels, of 44,325.

Spanish railways are operated by private companies, nearly all under guarantees or subventions from the government. Total railways in operation Jan. 1, 1912, 14,805 kilometers. Telegraph lines, 42,935 kilometers with 93,495 kilometers of wires; telegraph stations, 1956, of which 1118 are State. Post offices, 6041.

Finance. The unit of value is the peseta, par value 19.295 cents. In the table below are given revenue and expenditure for three years in pesetas:

	1911	*1912*	*1913*
Revenue	1,181,456,000	1,181,485,000	1,505,228,000
Expend.	1,045,865,000	1,162,858,000	1,519,228,000

The details of the 1914 budget are given below in thousands of pesetas:

Revenue	*1000Ps.*	*Expenditure*	*1000 Ps.*
Direct taxes on land, trade, government salaries, registration, etc.	484,409	Administration	12,044,079
Indirect taxes, customs, excise, etc.	429,800	Public debt	409,250
Tobacco monopoly, lottery, mint, and minor sundries	222,270	Pensions	78,200
Revenue from lands	22,187	State	6,114
Sales	6,003	Justice	19,512
Public treasury	37,778	Worship	41,016
		War	161,814
		Marine	70,267
		Interior	79,528
		Instruction	62,584
		Public works	90,148
		Finance	17,964
		Collecting	38,860
		Colonies	1,800
		Morocco *	51,886
Total	1,202,442	Total	1,139,593

* Campaign.

The total public debt stood Jan. 1, 1913, at 9,941,918,985 pesetas; Jan. 1, 1914, 9,973,485,962 pesetas.

Army. The law of June 29, 1911, prescribed personal obligatory service for all Spaniards with a few special exceptions. Recruits called for service are divided into two groups, in which the first is scheduled to receive three years' service with the colors, but in practice only two years, while the others receive less than one year's training. Service in the active army is followed by five years in the second portion, six years in the reserve and the remainder of the time of liability in the territorial reserve. The most recent figures available in 1914 gave the effectives of the permanent army as 123,000, its second line as 260,000, the reserve 290,000, and the territorial reserve about 500,000. The infantry is furnished with the Mauser rifle, and the field artillery with the Creusot quick firing gun.

NAVY. The act of Jan. 7, 1908, provides for 3 battleships: the *España*, launched Feb. 5, 1912; the *Alfonso III*, launched May 8, 1913; the third begun Oct. 2, 1911—building at Ferrol. The *España* completed her trials September, 1913; she has a displacement of 15,460 tons and carries 8 12-inch and 20 4-inch guns. Also building are 4 gunboats, of 800 tons, and 3 destroyers, of 370—all at Cartagena; and 24 torpedo boats for coastal service. The number of warships built and building in October, 1913, was as follows: 1 second-class battleship (9890 tons), 3 first-class protected cruisers (25,133), 1 second-class (5871), and 2 third-class (4083), 4 torpedo-boat destroyers (1845), 1 torpedo boat (127) of the first, and 4 (284) of the second-class, 8 first-class gunboats (6925) and 8 second- and third-class (3203)—all built.

A new programme is under consideration which would include 3 new dreadnoughts, 2 scouts, 8 destroyers, besides torpedo boats and submarines.

GOVERNMENT. The constitution vests the executive authority in the king acting through a responsible cabinet of ministers appointed by himself. The Cortes, conjointly with the king, exercises the legislative power. There are two houses—a senate of 360 members, partly hereditary, partly appointive, and partly elective, and a congress of deputies of 431 elective members. Reigning sovereign 1914, Alfonso XIII, born May 17, 1886. He married May 31, 1906, Princess Victoria Eugenie of Battenberg. Heir-apparent Prince Alfonso, born May 10, 1907. The council of ministers as constituted Oct. 27, 1913, was composed as follows: E. Dato, premier; Marques del Vadillo, justice; Marques del Lema, foreign affairs; Lieutenant-Colonel (Conde) del Serrallo, war; Vice-Admiral A. Miranda, marine; Conde de Bugalal, finance; J. Sánchez Guerra, interior; F. Bergamín, instruction; J. Ugarte, agriculture.

HISTORY

DATO CABINET AND THE GENERAL ELECTION. The Dato ministry, which had come into power in October, 1913, as a result of the dissensions among the Liberals on the question of regional decentralization, was Conservative in name, but in policy not much different from the Liberalism of Count Romanones. The Regional Decentralization (Mancomunidades) Bill (see the YEAR BOOK for 1913) which had wrecked the Romanones cabinet, was taken up by Premier Dato and on December 18 the Conservative government issued a provisional decree giving effect to the vital principle of the bill, allowing municipalities and provinces voluntarily to group themselves in regional associations for administrative purposes. The Dato cabinet not only owed its origin to a party schism among the Liberals; it was also bound up with a division of the Conservative party. Señor Maura, leader of the old-line Conservatives, who had played such a mysterious rôle at the formation of the Dato cabinet, soon took up a position of open antagonism to the Liberalizing tendencies of Señor Dato, so that, when a general election was held in the spring of 1914, the Maura Conservatives and the Dato Liberal-Conservatives appeared as almost distinct parties. The election of the Chamber of Deputies, March 8, resulted in a notable victory for the Conservatives of Liberal persuasion, the party representation being as follows: Maurist Conservatives, 10; Jaimists, 16; Dato Conservatives, 235; Romanones Liberals, 80; Prieto Liberals, 30; Reformist Republicans, 12; Republican Socialists, 21; Lerroux Radicals, 4—a brilliant victory for the liberal monarchy against both reactionaries and revolutionaries. To the Senate were elected, on March 22: 92 Conservatives, 51 Liberals, 9 Democrats, 7 Republicans, 3 Reformists, 4 Independents, 6 Regionalists, 3 Carlists, 1 Integrist, 1 Catholic, 1 Agrarian. The newly elected Cortes met on April 2. The Speech from the Throne contained two notable passages: one declaring the intention of the government to maintain friendly relations with the Vatican; the other emphasizing the cordiality of relations with France and Great Britain. During the debate on the Address in Reply to the Speech from the Throne, the leader of the Maurists in the Senate, Rodriguez San Pedro, declared that he and his followers would not support Sr. Dato. The premier retorted that he would remain in office whether the Maurist Conservatives were satisfied or not. Thereupon the Address was passed with a majority of 74 for the government.

NAVY ESTIMATES. In May, Count Bugallal read the general estimates for 1915, which showed an increase of $12,500,000 over the previous year, and revealed a deficit of nearly $20,000,000 to be met by an issue of treasury bonds. Notwithstanding this unfavorable financial situation, the government formulated a programme of naval construction involving the expenditure of 36,000,000 pesetas (about $7,000,000) a year for the next nine years. A battleship costing 70,000,000 pesetas was to be launched in 1917; another battleship was to be laid down in 1917; a fast cruiser of 1000 tons, costing some 4,500,000 pesetas, was to be commissioned in 1917; a similar cruiser was to be begun in 1917; and three submarines, costing 300,000 pesetas apiece, were scheduled for 1918. The work was to be done in Spanish shipyards at Cartagena and Ferrol by British shipbuilding firms.

MISCELLANEOUS. In May, the Infante Ferdinand obtained permission to marry (in October) Donna Luisa Silva Fernandez Henestro, daughter of Count Pius de Concha. On October 24 a sixth child was born to Alfonso XIII. The Rio Tinto strike was settled in January by arbitration. (See STRIKES.) A block of model workingmen's dwellings was erected at Seville, by a private donation of $100,000, plus contributions from the King, the government, and the municipality. In the War of the Nations, Spain remained rigidly neutral, although on the one hand her recent *rapprochement* with France and Great Britain might have been expected to draw her into the war, and although on the other hand, rumor credited Germany with offering Spain French Morocco as the price of military support. As Ambassador to France the Marquis de Valtierra succeeded the Marquis de Villa Urrutia early in September. Don Jaime, the Bourbon Pretender, was said to have been expelled from his castle at Frohsdorf, in Austria, because of his strong anti-German sympathies. The reported shooting of five Spaniards at Liége caused a certain amount of popular excitement, although the German government promised the Spanish ambassador that if the report should be confirmed, Germany would be willing to make satisfactory reparation. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

SPANISH LITERATURE. The official statistics for Spanish literature in 1914 not having yet appeared, it is impossible to say whether it has been more, or less, prolific than in recent years; but in any case it seems safe to say that it has been on the whole less satisfactory. The old favorites have been less in evidence, and there has been astonishingly little that is really extraordinary. That does not mean, however, that the year has been uninteresting, nor that literature, whether creative or scholarly, has been neglected.

LITERARY CRITICISM, despite its tremendous losses by death in the past few years, still flourishes, as witness the following: Azorín, *Los valores literarios* (keen essays concerning the values of certain moderns and classics); Antonio J. Bastinos (with Teodoro Baró and Ramón Pomés), *Arte dramático español contemporáneo;* A. Bonilla y San Martín, *Marcelino Menéndez y Pelayo (1856–1912)*; A. Calvet, *Fray Anselmo Turmedo, Heterodoxo español;* J. Cascales Muñoz, *José de Espronceda: su época, su vida y sus obras* (biographico-critical study, and revolutionary in its claims); L. Coloma, *Fray Francisco* (an historical biography of Cardinal Cisneros); Adolphe Coster, *Baltasar Gracián* (exhaustive biographico-critical study published in the *Revue Hispanique*, vol. xxix, 1913, but published as a book in 1914); Carmelo de Echegaray, *Trueba* (discourse concerning the Biscayan poet); Eguia Ruiz, *Literatura y literatos: estudios contemporáneos;* F. Flores García, *El teatro por dentro;* J. Gómez Centurión, *Jovellanos y los colegios de las Ordenes militares en la Universidad de Salamanca;* N. González Aurioles, *Cervantes en Córdoba* (awarded a prize in the Córdoban *Juegos Florales*); Julián Juderías, *La leyenda negra y la verdad histórica* (historical study that won the prize in a public contest, and examines the opinion that Europe holds concerning Spain); Manuel Machado, *La guerra literaria (1898–1914);* J. Ortega y Gasset, *Meditaciones del Quijote;* Rodríguez Marín, *Cervantes y la ciudad de Córdoba*, *Nuevos documentos cervantinos* (this latter containing 122 new documents), and *Lope de Vega y Camila Lucinda;* R. Ruiz Amado, *Don Miguel Mir y su "Historia interna documentada de la Compañía de Jesús";* Lucas de Torre y Franco-Romero, *Mosén Diego de Valera;* and Menéndez y Pelayo, fourth volume of the *Obras completas*. There was also a fair output of scholarly reproductions (both critical editions and those intended for scientific popularization): *Cancionero de Romances impreso en Amberes sin año* (by Menéndez Pidal); *Leyenda del Caballero del Cisne* (by Emeterio Mazorriaga); an edition of the long lost MS. of Dr. Francisco Cervantes de Salazar, entitled *Crónica de Nueva España*, which is of capital importance for a knowledge of the conquest of Mexico (by M. Magallón, under the auspices of The Hispanic Society of America); and Cervantes, *Obras completas anotadas: La Galatea*, vols. i and ii (by R. Schevill and Bonilla y San Martín). *Clásicos Castellanos* continued their production of scholarly editions for the general public: *Lazarillo de Tormes* (by Cejador); Fernando de Herrera, *Poesías* (by V. García de Diego); Cervantes, *Novelas ejemplares*, vol. i (by Rodríguez Marín); Luís de Léon, *De los nombres de Cristo*, vol. i (by Federico de Onís). The *Biblioteca Renacimiento* (the Spanish "Everyman's") has also reproduced some interesting works: Lorenzo Gracián, *El Criticón* (by Cejador); Tirso de Molina, *Cigarrales de Toledo* (by Said Armesto); and Lope de Vega, *La Dorotea* (by Américo Castro). Cristóbal Suárez de Figueroa's *El Pasagero* was published by the *Sociedad de Bibliófilos Españoles*, with an introduction by R. Selden Rose.

PROSE has been interesting chiefly for the new writers that have attracted attention, or for writers, familiar in other fields, who now appear with fiction or essays: Blanco-Belmonte, *Pompas de jabón* (realistic stories); A. Larrubiera, *Margara* (novel of Santanderino customs); J. Francés, *La danza del corazón* (hailed as his best work); J. Pallarés, *Nihil novum* (short stories that promise well); Blanca de los Ríos de Lampérez, *El tesoro de sorbas* (short stories, forming vol. vi of her *Obras completas*); E. Marquina, *Juglarías* (short compositions written to be read at certain public functions, whence the title); Concha Espina de Serna, *La esfinge maragata* (novel of customs of the Leonese district of Maragatería); P. de Répide, *Costumbres y devociones madrileñas* (describing all the popular festivals and customs of the year in Madrid); and F. Martín Caballero, *Vidas ajenas* (short, biographical accounts of six important characters).

POETRY during the year was in almost the same condition as prose. G. Morenas de Tejada, a young journalist favorably known as a prose writer, appeared with a volume of verse, *Las fuentes amargas*, hailed as an auspicious promise for the future. José Rodao, a fond father reveling in family scenes, published a delightful volume, *Mischiquillos y yo*. Emilio Muñoz García's *Por la región azul* (poems filled with gentle and sincere melancholy) was well received; and Enrique Vázquez de Aldana increased his literary baggage by a volume entitled *Cintas de la cabalgata azul*. Despite his blindness, the well-known poet, Cándido Rodríguez Pinilla, produced *El poema de la tierra*, with a prologue by Miguel de Unamuno, rector of the University of Salamanca. Vicente Orti Belmonte, with his *Solo Allah es vencedor* won the prize in the *Juegos Florales* at Córdoba. Other Floral Games were held at Sevilla.

DRAMA fared somewhat better this year than other literary forms, as it also did last year. Francisco Villaespesa wrote a poetic drama, *Doña María de Padilla*, produced successfully by María Guerrero and her husband, Fernando

Díaz de Mendoza. José de Elola, novelist, story-teller, scientist, and sociologist, published the first volume of his *Obras dramáticas*, which had been well received when staged. Pérez Galdós produced his *Alceste* in April. The Alvarez Quintero brothers (Serafín and Joaquín) presented *La consulesa* (written especially for that gifted actress, Joaquina del Pino, and performed by her at her benefit); and obtained a new triumph with *Los leales*. By Francisco Acebal we have a pleasing comedy, *A la moderna;* and to Alberto Insúa and Alfonso Hernández Catá we are indebted for the bright comedy, *En familia*. From G. Martínez Sierra we have *La mujer del héroe* (*sainéte*), *La tirana* (musical comedy), *Los pastores* (comedy), *Juventud: divino tesoro* (comedy); and a lyric drama (music by J. M. Usandizaga), *Las golondrinas*, which was cordially received. Eduardo Marquina obtained a real triumph at the Teatro Español with his tragedy, *La hiedra*.

SPECIAL LIBRARIES ASSOCIATION. See LIBRARY ASSOCIATION, AMERICAN.

SPECTRA. See CHEMISTRY.

SPECTROSCOPY. See PHYSICS.

SPEE, ADMIRAL VON. See NAVAL PROGRESS; WAR OF THE NATIONS.

SPINAL PARALYSIS. See POLIOMYELITIS.

SPIRITS. See LIQUORS.

SPITZBERGEN. See section so entitled under POLAR RESEARCH, *Arctic*.

SPITZKA, EDWARD CHARLES. An American neurologist, died Jan. 13, 1914. He was born in New York City in 1852, and was educated at the College of the City of New York, and at the University Medical College (New York University), from which he received the degree of M.D. in 1873. For the three years following he studied medicine at Leipzig and Vienna. He served for a time as assistant in the laboratory of embryology and histology at the University of Vienna. On his return to New York he engaged in the practice of medicine, specializing in the treatment of internal diseases, particularly of the nervous system. From 1885–87 he was professor of medical jurisprudence, and the anatomy and physiology of the nervous system in the New York Post-Graduate Medical College, and for many years he was also consulting neurologist of the Sydenham Hospital. Throughout his professional life he was an untiring investigator and his researches were of great importance; probably his most important discovery was that of interoptic lobes in the reptilian brain, although he also brought to light numerous facts in the anatomy of the human brain, and was called as an insanity expert in many noted cases, including the trial of Guiteau for the murder of President Garfield. At various times he was secretary of the Society of American Jurisprudence of Medicine, editor of the *American Journal of Neurology*, vice-president of the neurology section of the ninth International Medical Congress, and was president or an officer of many other medical and scientific societies. He was the author of a *Treatise on Insanity* in 1883, and also wrote the sections on diseases of the spinal cord and on inflammation, anæmia, and hyperæmia of the brain in William Pepper's *System of Medicine*, published in 1887.

SPLENETIC FEVER. See VETERINARY MEDICINE.

SPOROTRICHOSIS. Sporotrichosis is due to a yeast fungus, the sporothrix. When this organism obtains entrance to the human body it causes chronic subcutaneous abscesses which spread in a more or less direct line up and down the limbs, along the lymph channels. One case was reported in which the eyelids were affected. The organism gains entrance generally through a wound on the arm or forearm. According to Sutton of Kansas City the disease was quite common in the Mississippi River basin. Out of 58 cases recently recorded, 54 were infected while living in the region; out of 10 later cases, 9 were infected in this territory. Sutton was of the opinion that many cases go unrecognized, and that a considerable number were not reported. The only treatment which seems to influence the disease consists in large doses of potassium iodide taken internally. Locally, ordinary antiseptics are effective.

SPRINGS, MINERAL. See HYDROTHERAPY; SARATOGA SPRINGS.

STAR SPANGLED BANNER CENTENNIAL. See CELEBRATIONS.

STATE BANKS. Under this head is sometimes included loan and trust companies, savings banks, and those commercial banks chartered by State governments. The statistics here given, however, apply only to the latter. For other items, see LOAN AND TRUST COMPANIES; SAVINGS BANKS; BANKS AND BANKING; and FINANCIAL REVIEW. The report of the Comptroller of the Currency showed that on June 30, 1914, there were 14,512 commercial banks in the United States with capital of $501,154,000, and total resources of $4,353,663,000. Their number had increased during the fiscal year by 501, and their resources by $210,610,000. Their aggregate loans were $2,879,801,000. Nearly 30 per cent of these loans were time loans secured by one or more name paper without collateral; nearly 20 per cent were secured by real estate; 11 per cent by stocks and bonds; and 11 per cent by other collateral; while over one-fourth were unclassified. These banks held a total of $388,250,000 of stocks and bonds. Their individual deposits aggregated $3,226,793,000, of which 58 per cent were subject to check, and 21 per cent were savings deposits.

STATISTICAL ASSOCIATION, AMERICAN. The seventy-sixth annual meeting of the American Statistical Association was held at Princeton, N. J., Dec. 28–31. At the same time were held sessions of the American Economic Association (see POLITICAL ECONOMY) and the American Sociological Society (q.v.). Topics treated in the sessions of the association include "The Relations of the Association to (a) Federal Statistical Bureaus, and (b) State Statistical Bureaus," with papers by Frederick L. Hoffman, Robert E. Chaddock, and Leonard W. Hatch. The relation of the association to municipal statistical bureaus was treated by Edward M. Hartwell, and its relation to public service and public statistics was treated by Frederick A. Cleveland, M. O. Lorenz, and Julius Parmelee. Prof. John Gillin presented a paper on social statistics and surveys. A round table session was had in conjunction with the American Economic Association on "The Statistical Work of the United States Government." A number of distinguished economists and statisticians took part. A final session was devoted to "Improvement and Extension of the Registration Service," with papers by William J. Harris, Cressy L. Wilbur, and Louis I. Dublin.

See POLITICAL ECONOMY, *American Economic Association*.

STATISTICS. See VITAL STATISTICS and paragraphs under the direct title.

STEAM ENGINES. An interesting combination of gas engine and reciprocating engine was to be found during the year at the new Detroit shops of the Ford Motor Company, where a two-cylinder gas engine, arranged in tandem, and a tandem compound condensing engine were both connected to the steam shaft, and were capable of developing 6000 horsepower. This plant was designed to secure the greatest economy, as the gas engine works most advantageously when under full load, and it was not purposed to operate one of these units, of which there are four, unless there was at least half a load for it. The steam portion of the unit was to handle the extra load and do the regulating, as it was provided with a governor, which was not the case with the gas side of the unit. The steam exhaust is connected with a surface condenser in which the vacuum is regulated according to the atmospheric temperature, and the warm circulating water, after having passed through the condenser, is passed through the heating system in the adjoining buildings. On the other hand, the exhaust from the gas engine goes to a superheater, located between the high and low pressure steam cylinders, and regenerates the steam before it reaches the low pressure cylinder. Instead of using direct steam from the boiler, as is usual, another portion of the hot gas of the engine exhaust passes through the jacket of the high pressure steam cylinder and prevents the heat loss. All the exhaust gases then pass to a feed water heater, through which all the water required for steaming passes. This feed water is first circulated through the jackets of the gas engine cylinders, where it is heated to a temperature of from 150° to 180°, and then in passing through the heater is raised to 250°. The plan is that nearly all of the heat generated is utilized, and great savings and economy are anticipated. The gas engine side of the unit is of the 4-stroke system, with a cylinder 42 inches in diameter, and 72 inches stroke, while the steam cylinders are 36 and 68 inches in diameter, and 72 inches stroke.

The use and development of such forms of steam engines as the unaflow or locomobile types continued during the year, while there was but little occasion for any improvement in the standardized form of reciprocating engines. The unaflow engine in 1914 had been taken up by several leading engine manufacturers, and a type had been secured with a steam consumption of from 11 pounds to 12 pounds per horsepower-hour for high pressure. It seemed to be shown that a cylinder working on the unaflow principle would show almost as much maximum speed as a combined or multistage engine, and a new form was being given serious consideration by engineers designing power plants, where small units with high pressure were required.

During the year the first unaflow engine built in America, under the direction of Professor Stumpf, was to be put in operation. It was a 15 by 16-inch engine, designed to carry 100 kilowatts, and running at 250 revolutions per minute, with a steam pressure of 145 pounds, a superheat of 88°, and a vacuum of 25½ inches. Under these conditions, it developed 1 horsepower on 12.5 pounds of steam. Other designs of unaflow engines were brought out by the Skinner Engine Company, while the Nordberg Company produced a unaflow engine with poppet valves designed to supersede for high pressures and superheats, its previous design employing a Corliss valve. One of the interesting features of the year was the placing in commercial service of a Buckeye-mobile, a unit rated at 115 horsepower, and used in connection with a 75-kilowatt alternator.

The combination of reciprocating engines with turbines continued to find application, especially in the case of plants where efficient reciprocating engines were already in use, or where the economical characteristics and use of the reciprocating engine required consideration. Such mixed installations were distinctly serviceable in many cases, and a recent plant in Milwaukee was designed with a total equipment rating of 61,900 kilowatts.

STEAMSHIPS. See SHIPBUILDING.

STEAM TURBINES. During the year progress was made both in the details of construction, and in the size of the various turbo-generators used by the important electric lighting stations. The 30,000-kilowatt unit had become recognized practice, while designers were considering the construction of a 50,000-kilowatt unit. The performance of large turbo-generators at the central power stations was considered in an interesting report made to the American Institute of Electrical Engineers in June, 1914, in which attention was called to the fact that the thermal efficiency was the only just criterion to consider in discussing the economy of a large central station plant, and a comparison was made of the performance of various units of different sizes. The report indicated that there was a very wide range of capacity over which the water rate changed but slightly, and that the rate of 14 pounds per kilowatt hour was passed at an output rating of about 5000 kilowatts, while the rate of 13 pounds was reached only at an output of 30,000 kilowatts.

An interesting development of the year in the case of the largest size turbine units was a combination of two or more elements with motors of different speeds, for example, a high pressure single flow element operating at 1500 revolutions per minute in combination with a double flow low pressure element at 750 revolutions per minute. This arrangement was devised to take advantage of the best rotative speed for each element, and the gain more than counterbalanced the special division of the generator. The turbine continued to show for large sized units greater efficiency than the reciprocating engine, but in small sizes its use was inferior to the economical forms of the latter, and where it was installed its use was governed by considerations not of efficiency, but of first cost. As regards rated output, the turbo-generator unit was showing a distinct tendency towards lower cost, and that way could more than hold its own with internal combustion engines where the original cost was necessarily high.

The largest steam turbine in the world was a 35,000-kilowatt unit for the Philadelphia Electric Company. This was a 13-stage horizontal Curtis turbine, 63 feet, 2 inches long over all, 21 feet, 7 inches wide, and 15 feet, 10 inches high. Its weight was 600 tons, and it received steam at 215 pounds pressure, and 150° superheat, exhausting against an absolute pressure of 1.5 inches of mercury. When operating at the most economical load, 25,000 kilowatts, it was expected to develop a kilowatt hour on 11.9 pounds of steam, but when used at the full rated load of 35,000 kilowatts, the water rate would increase to 12.6 pounds per unit, though, with a better vacuum, steam consumption would be slightly lowered. The condenser for this turbine naturally was the largest ever constructed, and was of the centre flow service type, containing 50,000 square feet of surface in 1-inch tubes. The injection water is supplied with a 48-inch pipe. The various auxiliaries are all turbine-driven centrifugal units, and the air pumps are of the Le Blanc type. The generator delivers 3-phase, 60-cycle current at 13,200 volts, at a speed of 1200 revolutions per minute.

Another notable turbine was the 25,000-kilowatt Parsons turbine at the Fisk Street station in Chicago, a unit of English construction, which was placed in satisfactory operation during the year. This unit was of the 2-cylinder tandem type, and shows about the same economy as the Curtis turbine at Philadelphia.

STEEL. See IRON AND STEEL, and METALLURGY.

STEELE, DANIEL. An American clergyman, educator, and author, died Sept. 2, 1914. He was born in Windham, N. Y., in 1824, graduated from Wesleyan University in 1848, and for the two years following was tutor in that institution. In 1850 he was ordained a minister of the Methodist Episcopal Church, and acted as pastor in several cities in Massachusetts until 1861. From 1862 to 1871 he was a professor in Genesee College, N. Y. He was elected first president of Syracuse University in 1872, but resigned in the same year to become a pastor in Boston. He filled successive pastorates in Auburndale, Lynn, Salem, Peabody, Reading, and Boston until 1888. In 1884 and in 1891 he was professor of New Testament Greek at Boston University; from 1886 to 1889 was professor of systematic theology, and filled the chair of practical theology in 1892. He was the author of: *Commentary on Joshua* (1873); *Love Enthroned* (1875); *Commentary on Leviticus and Numbers* (1891); *Christian Perfection* (1896); *Half Hours with St. John's Epistles* (1901); *Steele's Answers* (1912), and contributed also to religious periodicals.

STEFANSSON, VILHJAHLMR. See POLAR RESEARCH, *Arctic*.

STERRETT, JOHN ROBERT SITLINGTON. An American scholar and educator, died June 16, 1914. He was born at Rockbridge Baths, Va., in 1851, and was educated at the Universities of Virginia, Leipzig, Berlin, Athens, and Munich, receiving the degree of Ph.D. from the last university in 1880. He served as a professor of Greek in Miami University in 1886 and from 1888 to 1892 held the chair of Greek at the University of Texas. From 1892 to 1901 he was professor of Greek at Amherst College, and from 1901 until his death was head of the department of Greek at Cornell University. He was the leader of various archæological expeditions to Asia Minor, and in 1896–97 was professor at the American School of Classical Studies at Athens. He was a member of several scientific societies, associate editor of the *American Journal of Archæology;* was joint editor of the *Cornell Classical Studies;* was editor and translator of Strabo for the Loeb Classical Library; and contributed to magazines on subjects of travel and archæology. His published writings include: *Inscriptions of Sebaste; Inscriptions of Assos* (1885); *Inscriptions of Tralles* (1885); *Wolfe Expedition to Asia Minor* (1888); *The Torch-Race* (1902); *The Iliad of Homer* (1907). He was the organizer of the Cornell Expedition to Asia Minor in 1911.

STEVENS, LILLIAN M. N. An American temperance advocate, died April 6, 1914. She was born in Dover, Me., in 1844, and was educated at the Foxcroft Academy. In early womanhood she taught school and in 1867 married Michael Stevens, a merchant of Portland, Me. In 1874 she assisted in organizing the Maine Woman's Christian Temperance Union, was its treasurer from 1874 to 1877, and in the latter year she became president. From 1894 to 1898 she was vice-president of the National Woman's Christian Temperance Union; after the death of Frances E. Willard in 1898, she became acting president, and in the same year was elected president, being reëlected at each succeeding year up to 1914. She was also vice-president at large of the World's W. C. T. U. and for many years was a representative from Maine in the National Conference of Charities and Corrections.

STEVENSON, ADLAI EWING. Former Vice-President of the United States, died June 14, 1914. He was born in Christian Co., Ky., in 1835, the son of a Scotch farmer. He received his education in the common schools and at Centre College, Ky. In the last year of his college course he was called home on account of an accident to his father and was never able to return. He took up the study of law, was admitted to the bar in 1857, and began practice at Matamora, Ill. From this time he took an interest in politics, and in 1865 was elected district attorney, which post he held for four years, and for the following four years was master in chancery. Removing to Danville, Ill., he formed a partnership with J. S. Ewing, and in 1874 was nominated for Congress by the Democrats of the Bloomington district, which was normally Republican. He won by a majority of 1200 votes, but was defeated for reëlection, although again elected in 1878. He was a delegate to the National Democratic Convention of 1884 in Chicago, and after the election of President Cleveland was appointed First Assistant Postmaster-General, during which appointment he removed 45,000 Republican postmasters and replaced them with Democrats. In 1892, during the efforts to bring about the recognition of President Cleveland, Stevenson's loyalty to the former and his effectiveness as an organizer led to his nomination as Vice-President, and he was elected. He was a nominee for the Vice-Presidency on the ticket with William J. Bryan in 1900 and in 1908 was a candidate for Governor of Illinois, but was defeated by Governor Dineen after a contest in the Legislature, after which time he took no active part in politics. He was the author of a book of political reminiscences. Mr. Stevenson was very popular with the Republicans as well as Democrats and it was said that he did not have a single bitter enemy.

STEVENSON, FANNIE (VAN DE GRIFT) OSBOURNE (MRS. ROBERT LOUIS STEVENSON). An American writer and artist, but best known as the wife of Robert Louis Stevenson, died Feb. 19, 1914. She was born in Indianapolis in 1840, and in 1857 was married to Samuel Osbourne. Shortly after her marriage she removed with her husband to California, and in a few years they separated by mutual consent. Mrs. Osbourne returned to Indianapolis in 1875 and soon afterwards removed to Paris where she studied painting for three years and achieved some repute as an artist. After the death of her youngest child she became reconciled with her husband and both returned to Indiana. Not long afterwards they separated again and she for the second time took up her residence in California.

While a student in Paris she had met Robert Louis Stevenson, and both were members of an artists' colony at Gretz. After her return to California Mrs. Osbourne suddenly became seriously ill, and Mr. Stevenson, hearing of this, at once set out for California. He traveled by steerage on the ocean and by emigrant train across the States; his experiences on this journey are detailed in *Across the Plains*. In December, 1878, reaching San Francisco worn out, he himself experienced a long and severe illness, and Mrs. Osbourne, who by this time had recovered, nursed him back to health. She obtained a divorce from her husband in the following spring and was at once married to Stevenson. For a time after their marriage they lived in a mountain town in the Sierras in the hope that the high altitude would benefit Stevenson's health, and while here Stevenson wrote *The Silverado Squatters*. He grew no better and they returned to Europe, spending much time in the south of France.

In 1887 they returned again to the United States. Mrs. Stevenson finally accompanied her husband to the South Seas where, after touring among the islands they finally settled at Samoa, where Stevenson died on Dec. 4, 1894. Throughout their life together Mrs. Stevenson cared for her husband as a nurse, acted as his secretary, and in every possible way conserved his declining strength. After his death she returned to San Francisco and built a house where she lived with her son Lloyd Osbourne and his family. This house, which was filled with Stevenson's books and objects of art, and with Samoan relics, was saved from destruction in the fire of 1906 by members of the Bohemian Club. In 1908 Mrs. Stevenson sold this house and removed to her country home at Montecito. She died at Santa Barbara. She was a frequent contributor to magazines and periodicals, and published *Cruise of the Janet Nichol Among the South Sea Islands: a Diary* (1914).

STOCK EXCHANGE. See FINANCIAL REVIEW.

STOCK RAISING. LIVE STOCK SUPPLY. The receipts of live stock at the six principal western markets of the United States in 1914 were, in round numbers, 6,500,000 cattle, 15,000,000 hogs, and 12,000,000 sheep, showing a decrease of nearly 775,000 cattle, 2,000,000 hogs, and 6,000,000 sheep, as compared with 1913. The principal cattle shortage was at Kansas City, where it amounted to about 300,000 head, and there was no increase at any of the markets. More than one-half of the decrease in hog receipts was at Chicago. Hog cholera was the chief cause of this enormous decrease. During the first six months there was a heavy movement of sheep to market, showing a big increase, but the decline during the last six months made a decrease of nearly 600,000 head for the year, most of the loss being at Chicago.

During the fiscal year the losses due to exposure and disease were as follows: Cattle, 1,737,400, or 19.8 per 1000 head; sheep, 2,124,400, or 21.7 per 1000; swine, 7,004,800, or 119 per 1000; horses, 522,800, or 20.6 per 1000. The loss of swine was greater than in the previous year, and was mainly caused by hog cholera.

The prices for live stock were very unsteady, especially during the last six months, the cattle market being very erratic, due in part to the general changes going on in the live stock industry, but also in part to the European War, and to the outbreak of the foot-and-mouth disease, which occurred in October.

The quarantine of the Stock Yards at Chicago and Saint Louis, while they were being disinfected, interfered with the sale of stocker cattle. On the other hand, the slaughter trade was not interfered with, as all the quarantine markets were on a slaughter basis, though quotations were unsteady. It caused an unusually heavy stocker trade at Kansas City, and a fire there created a great difficulty in handling the oversupply of cattle. The International Live Stock Show at Chicago, and the Royal Show at Kansas City were not held, in order to avoid the possible danger of further spreading the disease. Domestic meat consumption was somewhat curtailed on account of the disease.

Each year since the census of 1910 there has been a constant reduction in the number of meat animals in this country, yet the value per head has advanced so, that notwithstanding the number has been reduced by about 18 million head, the total value of the meat-producing animals is considerably higher than in the census year. Although this shortage has been felt for several years in the United States, it was not until 1914 that the depletion of herds and flocks throughout the world was noticed.

When the Underwood tariff went into effect, late in 1913, the lowering of values was temporary and insignificant, because of this general world shortage. South America and Australia are having difficulty in supplying England with meat that was formerly sent from the United States. The European War is still further decreasing the supply of all kinds of domestic animals in all the countries of Europe. According to estimates of the Department of Agriculture, the present beef production in the United States is somewhat less than 7,000,000,000 pounds annually.

About one-third of the cattle of the country other than milch cows are in seven of the corn-belt States, where there is comparatively little grazing. Many of these cattle are bred on the cheaper grazing lands, and shipped as stockers and feeders to the corn belt, where they are fattened, finished, and marketed by men who are feeders and not breeders nor general farmers. But this practice, which has grown up during the last 50 years, seems destined to be changed to some extent. Already under an intensified agriculture there is a tendency to raise more cattle in the corn-belt States, and to do more finishing nearer the grazing lands. Nevertheless, the cost of producing beef and other meats seems to be increasing, and under any system the present prices are likely to be maintained or be even higher in the future, unless there is some source of supply from foreign countries not now available. The number of calves slaughtered has gradually been decreasing now for three years, which is an indication that either fewer calves are born, or that more are raised to maturity.

Since 1905 there has been an increase of 59 per cent in the number of animals kept on National forests as a result of supplying watering places, and the new system of granting grazing permits. These lands now furnish grazing for about 1,600,000 cattle and horses, and 7,600,000 sheep and goats, in addition to the young animals, and temporary grazing to many animals which feed through the forests under crossing permits. The grazing fees are now returning over $1,000,000 annually to the National government.

The Secretary of Agriculture points out that there is an opportunity to improve the output of live stock products in the South, for 12 Southern States import more than $48,000,000 worth of meats and dairy products and poultry. To assist in remedying this condition, Congress appropriated $50,000 for the purchase of a farm in Louisiana, and for the investigation of live stock production in the area where the cattle tick has been eradicated, and in the boll weevil and cane sugar districts. Unusual efforts have been made during the year by State and Federal officials to prevent the enormous losses caused by disease and exposure. The growing of more of the smaller meat animals has also been strongly urged in order to help solve the growing scarcity of meat.

Meat and Meat Inspection. The system of distributing meat has been a very wasteful one, and this has led the Department of Agriculture to undertake investigations in which shipments of animals whose approximate cost of production is known, have been followed from the farm through the stock yards and packing plants, to wholesaler, retailer, and consumer. All normal factors have been taken into account, and although sufficient data have not been obtained to be publicly announced, it is believed that the results will show the changes necessary for reducing the unavoidable wastes which now occur during distribution. Already it is apparent that the parcel post will be one important factor in solving the problem, and private individuals have found that farm-slaughtered meat can be economically marketed in this way. The municipal slaughtering plant erected at Paris, Texas, in 1909, has proved to be so economical that this coöperative method of slaughtering farm animals has been followed in several other places.

Meat inspection was conducted by the Federal government at 893 establishments in 244 cities and towns. The total number of animals undergoing antemortem examination was 57,033,401, of which 174,373 were suspected. Of the number passed, 281,303 were condemned. There were also large quantities of meat products condemned on reinspection. The imported meats inspected amounted to 197,389,348 pounds, of which 0.28 per cent were condemned. There were also 31,839 samples of meat, and meat food products analyzed in the government laboratories. The use of preservatives seems to be growing less common.

The number of cattle and calves slaughtered, under government inspection during the fiscal year ended June 30, shows a decrease of more than 700,000 from the preceding year, and a decrease of 3.5 per cent, as compared with the average of the previous seven years, the period during which the present law has been in force. In the number of swine there was an increase over 1913 of more than a million, and an increase of 2.6 per cent over the average of the previous seven years.

Revised regulations in regard to slaughtering animals were signed by the Secretary of Agriculture, July 15, to become effective November 1, except those governing imported meats, which go into effect Jan. 1, 1915.

The new regulations provide for antemortem examinations, and also the withdrawal of inspection from establishments that violate the regulations. Packers are also permitted to sell second-class sterilized meat on a plan similar to that allowed by the German and Austrian governments. New regulations were issued by the United States government allowing cattle to be shipped from the quarantined districts of Mexico directly to slaughtering centres in this country without the 60-day detention on the border, as formerly. This applies only to cattle that are to be slaughtered; all others must as formerly be quarantined for 60 days in Texas as a precautionary measure against the spread of the cattle tick. There were also new regulations governing the interstate movement of live stock, which became effective July 1. They were designed to facilitate the movement of live stock from quarantined areas, or from public stock yards.

The International Trade in Meat and Live Stock. For the fiscal year ended June 30, 1914, the United States exported 143,357,441 pounds of meat and meat products, most of which consisted of lard and other pork products. The amount imported was 49,892,878 pounds, of which beef constituted 43,837,348 pounds. This beef came from Mexico, Canada, Argentina, Uruguay, Australia, and New Zealand, 58 per cent coming from Argentina. About 67 per cent of the Argentine export is controlled by Chicago packing companies, which ship it to themselves in New York. Meat from Australia affected the packing interests on the Pacific coast.

The outbreak of the war unsettled the live stock market. At first there was a sharp advance in domestic prices, but this was soon followed by liquidation because of the high cost of feed, the tight money market, and the inducement to sell at the high prices. Consequently the fall prices on many grades of live animals were lower than if the war had not occurred. In particular the elimination of Germany as a buyer of hog products seriously depressed the prices for live hogs and dressed pork.

Nearly all the 9,000,000 pounds of chilled and frozen beef which had been coming to the United States from Argentina went to Europe. On September 9, the government of France placed all fresh meat on the free list, and since then an unusually large quantity of fresh and canned beef, along with other foodstuffs, has been exported from this country, not only to France, but to other European countries. Coincident with this the importation of meat was materially below that of the closing months of 1913.

There were substantial increases in the number of cattle, sheep, and pigs in England and Wales. In Argentina, Australia, Cuba, Mexico, and Russia, the number of cattle has remained

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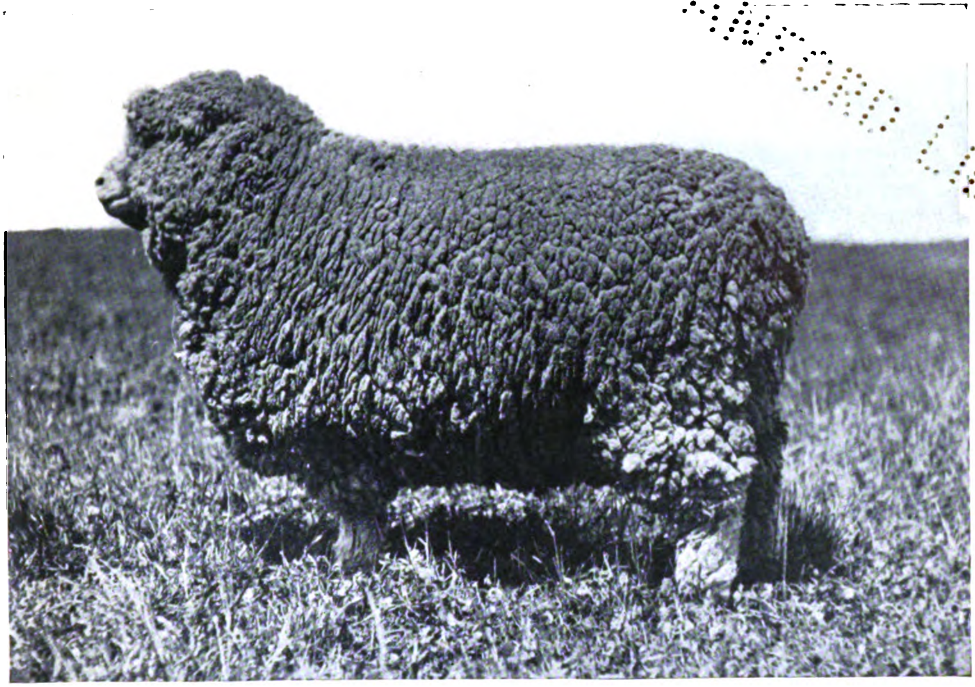

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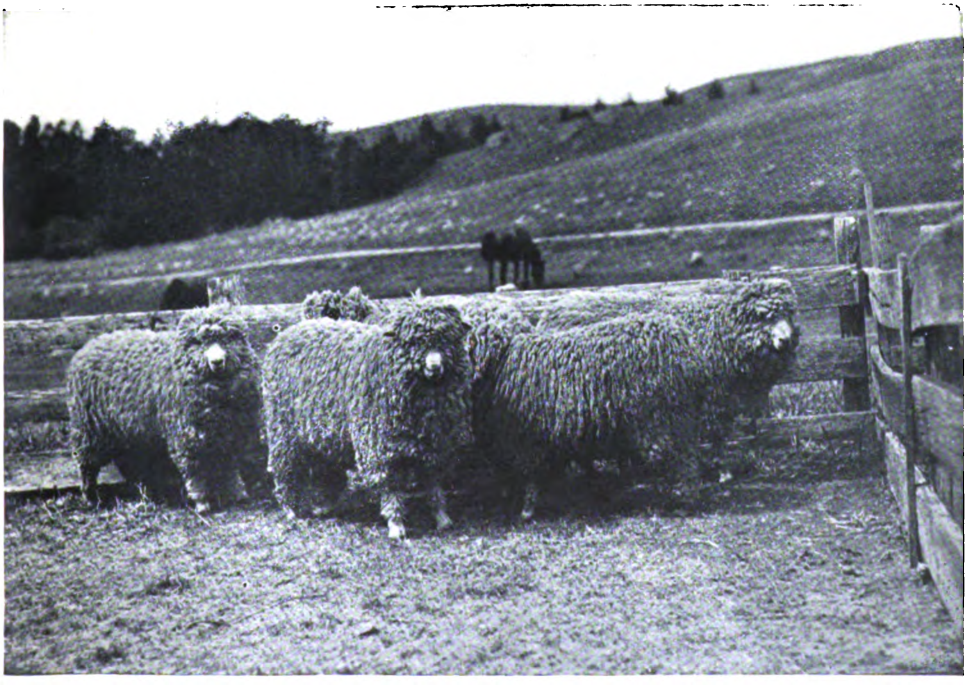


CORRIEDALE SHEEP, YEARLINGS

STOCK RAISING

NEW SHEEP IMPORTED INTO THE UNITED STATES FROM NEW ZEALAND

in a stationary condition or with a diminishing tendency. In Canada, New Zealand, and Uruguay, there has been some increase, but we can expect no material increased supply of meat at present unless breeding stock is slaughtered; this will probably not occur in these countries, though doubtless it will be true of continental Europe for a considerable area around the battlefields.

The war practically stopped the importation of purebred draft horses into the United States, with the exception of a very limited number from England. For several years previously the imports averaged about 3000 annually, but this loss will not be felt, as there is a large number of purebred stock from which to breed draft horses as needed. The principal breeds are now well established in this country, and a good opportunity is offered for American breeders, as the war seems destined to use up all animals available for service. The United States, next to Russia, has more horses than any other country; 58 per cent of the world's supply is in these two countries. European agents began to scour the United States for army horses soon after the outbreak of the war. In England, thousands of farm horses were commandeered for the use of the army.

WOOL. At the call of the Secretary of Agriculture there was a conference in Washington, in June, of wool interests, at which producers, dealers, and manufacturers were present to discuss matters of mutual interest, in particular to discuss measures for increasing the output of wool in the United States, such as the destruction of predatory animals, standards for grading wool, and experimental farms for sheep breeding.

The grading of wool has not yet become an art in America, as it has in Australia. The Bureau of Animal Industry has prepared a collection of American and Australian wools to use in educating farmers to prepare their wool so that income from wool may be increased, even with the present output. The growers' semicooperative selling agency, which has been in operation six years, has accomplished much less than anticipated, as it was used as a lever to obtain higher prices rather than to consign their wool to the company. The liquidation of mutton sheep, which has been in progress for several years, has ceased so that the price of mutton is now nearly comparable with that of beef. As a result, Virginia, Kentucky, Tennessee, and some of the trans-Missouri States have begun stocking up with sheep.

The number of sheep shorn in Australia was 109,692,264 head. The average weight of the fleece was 7.87 pounds, as compared with 7 pounds for 1913. The total clip was larger than the previous record clip of 1912. The quality was good, being well grown, and with a much broader fibre than the previous record clip of 1913. The Corriedale sheep, of New Zealand, which is the result of years of selecting crosses of Lincolns and Merinos, is growing in popularity as a general-purpose sheep. They are hornless, and have a heavy carcass covered with a good fleece. Arrangements have been made to bring some to the United States.

For the first eight months the imports of raw wool showed a big increase over the previous years as a result of the new tariff. In early summer coarse wools were sold for very low prices, although in spite of increased imports the market for fine wool continued good. The European War reversed the market conditions; there was a demand for blankets, and the price of crossbred wool advanced. On October 6, England declared an embargo on wool and woolen blankets, which still further affected prices in the United States. This served American interests which had a supply of wool as well as though a high tariff bill had been enacted.

Bibliography. Among important publications which have appeared during the year are the following: G. E. Day, *Productive Swine Husbandry* (Philadelphia and London, 1913); C. W. Gay, *The Principles and Practice of Live Stock Judging* (New York, 1914); T. F. Hunt and C. W. Burkett, *Farm Animals* (New York, 1914); H. R. Lewis, *Productive Poultry Husbandry* (Philadelphia and London, 1913); W. M. McKee, *South African Sheep and Wool* (Cape Town, 1914); A. D. Melvin, "The South American Meat Industry," in *Year Book*, Dept. Agr., pp. 347–364 (Washington, D. C.); A. H. Sanders, *The Story of the Herefords* (Chicago, 1914); Henry P. Smith, *The Sheep and Wool Industry of Australasia* (London and Melbourne, 1914); G. F. Warren, C. H. Eckles, J. M. Evvard, and W. A. Cochel, *Farm Animals* (New York, 1914).

STONE INDUSTRY. The total value of the stone produced in the United States in 1913 surpassed all previous years, and amounted to $83,732,995, compared with $78,193,220 in 1912. Of the total value produced in 1913, the granite was valued at $20,793,800; trap rock, $9,289,809; sandstone, $7,033,067; marble, $7,870,890; and limestone, $38,745,429. Pennsylvania ranks first in the value of its stone industry, and has held this position except in 1908, when Vermont reported the largest production. Other States in the order of the value of their product are Vermont, New York, Ohio, Indiana, Illinois, California, Massachusetts, and Missouri. For further details of the production of stone in these and other States, see the paragraphs on *Mineral Production* under the State articles.

STORAGE BATTERY. See ELECTRIC BATTERIES.

STORER, FRANCIS HUMPHREYS. An American chemist and educator, died July 31, 1914. He was born in Boston in 1832, and studied at the Lawrence Scientific School and at Harvard University in 1850–51, for two years following being assistant to Professor Cook in chemistry. In 1853 he became chemist to the United States North Pacific Exploring Expedition. Returning to Harvard for additional studies he received the degree of S.B. in 1855, and for the two years following studied abroad. From 1857 to 1865 he practiced as chemist in Boston, and from 1865 to 1870 he was professor of general and industrial chemistry at the Massachusetts Institute of Technology. From 1870 to 1907 he was professor of agricultural chemistry at the Bussey Institution, and from 1871 to 1907 was dean at that institution. He was the author of: *Manual of Inorganic Chemistry* (1869); *Manual of Qualitative Chemical Analysis* (1868); *Elementary Manual of Chemistry* (1894); *Manual of Qualitative Analysis* (1899); *Bulletin of the Bussey Institution*, etc.

STORM WARNINGS. See WIRELESS TELEGRAPHY AND TELEPHONY.

STRAITS SETTLEMENTS. A British crown colony chiefly in the Malay Peninsula, deriving its name from the Straits of Malacca. The colony is composed as follows, area in square miles, population 1911, government seats in last column:

	Sq. m.	*Pop.*	*Cap.*
Singapore	217	311,985	Singapore
Penang	571	278,003	George Town
Malacca	720	124,081	Malacca
Total	1508	714,069	Singapore

Included with Singapore are its dependencies—the Cocos or Keeling Islands, about 20 in number, with a population of about 700; Christmas Island, about 62 square miles, population about 1100. Included with Penang are Province Wellesley, a strip of territory averaging 8 miles in width, and extending 45 miles along the coast, with 10 miles of territory to the south of the Krian, a total area of 280 square miles; and the Dindings, about 183 square miles. The total population was estimated for 1913 at 745,362 (including the population of Labuan). Of these, 488,236 were males, and 257,126 females. In Singapore (including the dependencies) there were 226,863 male and 92,056 female Asiatics, 4406 male and 1732 female whites, and 2405 male and 2580 female Eurasians; in Penang (including dependencies), 173,996 male and 107,462 female Asiatics, 810 and 482 whites, and 845 and 970 Eurasians; Malacca, 77,899 and 50,865 Asiatics, 233 and 86 whites, and 779 and 893 Eurasians. Education (not generally compulsory) is provided in government and grant-in-aid schools to the number of 225, with an enrollment of 25,673, and an average attendance of 23,253.

No tonnage dues for general purposes are levied, and the ports are free. The trade is largely transit, though tapioca, rice, and rubber are produced for export in Malacca and Province Wellesley, and sugar in Province Wellesley. In the table below are shown in Straits Settlements dollars trade and finance statistics for three years, and shipping in tons entered and cleared:

	1910	*1911*	*1912*
Imports	364,470,658	398,084,421	450,039,016
Exports	324,189,786	341,889,822	375,128,758
Revenue	9,836,828	11,409,221	12,912,577
Expenditure	7,582,242	9,085,389	9,295,102
Shipping	23,429,495	24,086,904	25,841,494

The railways of the Straits Settlements came under the management of the Federated Malay States government Jan. 1, 1912. The terms called for a lease of 21 years, subject to septennial revision. It was later proposed to sell the railways outright to the Federated Malay States government. The Governor in 1914 was Sir Arthur Henderson Young, appointed 1911.

STREET CLEANING AND SNOW REMOVAL. A snow removal conference was held at Philadelphia early in the year, an exhibit of street cleaning appliances was held under the auspices of the Street Cleaning Department of New York City in November, and street cleaning and snow removal were extensively discussed in various technical societies, and in the technical press during the year. A novel "snow fighting" plan was worked up by the Street Cleaning Department of New York City and authorized by the Board of Estimate and Apportionment for use in 1914–15. Briefly, the new plan, which was given an experimental trial on a practical scale in 1913–14, was to begin to clear away the snow as soon as a heavy fall begins, instead of letting it accumulate, and to use the sewers instead of wagons for the removal of the snow to the water front. When a heavy snowfall begins each unit of the normal street cleaning force will become the leader of a snow-removal squad, the other members being subject to emergency call. Push shovels, or pans, will be used to collect the snow and move it along the street surface without lifting until it is dumped down the nearest manhole into the sewer. Flushing the sewers from water mains will be used where needed to supplement the normal sewage flow. An apparently attractive scheme for extra pay for extra work was devised.

STREET RAILWAYS. See MUNICIPAL OWNERSHIP.

STRIKES. While there was considerable unrest during 1914, thousands were unemployed, and earnings scanty, those involved in labor disputes were not as numerous as in recent years. (See UNEMPLOYMENT; and ARBITRATION AND CONCILIATION.) No time, in fact, during the last dozen years has the number been so small, the 175,000 of 1907 being the closest approach to the 160,000 during 1914. However, the strikes in the Colorado coal, and the Calumet copper mines were among the hardest fought conflicts in our industrial history. The rising prices and the increased cost of living perhaps still continue to be the main causes for the unrest, while the raising of wages usually results from the pressure on the part of the workingmen. According to *Bradstreet's*, the number of persons out on strike, during each of the last 10 years, were as follows: 1905, 200,000; 1906, 550,000; 1907, 175,000; 1908, 230,000; 1909, 223,000; 1910, 550,000; 1911, 255,000; 1912, 475,000; 1913, 425,000; 1914, 160,000.

CALUMET STRIKE. On April 13, 1914, the secretary of the Western Federation of Miners announced that the strikers at the copper mines of Michigan had voted to return to work, and waive recognition of the union. This famous controversy, one of the bitterest in our industrial history, began in July of the previous year in about 20 copper mines of Keweenaw Peninsula, Mich., and was called by the Western Federation of Miners. Nearly 15,000 were made idle, among whom 38 nationalities were represented; the largest group were Finns. The strikers demanded first the recognition of the Western Federation of Miners, the abolition of the "one man drill," a minimum wage of $3 for trammers, and $3.50 for miners, and an eight-hour day. The last two demands were granted by the operators, as were two minor grievances, namely, that the miners be granted some way of presenting their grievances, and that they be treated justly. These demands were made only after the operators had refused a request for a conference to discuss conditions. Rioting occurred in the first few days, and 2700 militia were sent to the scene by the Governor of Michigan. In addition, the companies also employed a considerable number of guards from a detective agency, called gunmen by the miners. These mercenaries were a cause of intense bad feeling; their outrages, such as shooting an Austrian miner for crossing the company's lands, created a spirit of retaliation. Several attempts at mediation on the part of Governor Ferris of

Michigan, John A. Moffat, representing Secretary of Labor Wilson, and others, were resisted by the operators and owners. The officials of the companies refused absolutely to treat with the representatives of the Western Federation, declaring that the men might return individually. In the last few days of 1913 President Moyer of the Western Federation was seized and forcibly ejected from the strike zone. A grand jury, which was instructed to look into this incident, took no action with regard to it, but proceeded to indict Moyer and 38 union officials for conspiracy to prevent nonunion men from working. In April the strikers were finally forced to submit, costing them, it is estimated, about $1,000,000. Secretary of Labor Wilson in his annual report commented on the strike, and laid the blame upon the local operators, and expressed the conviction that the mine owners could have averted the strike. He stated: "If the managers of the property involved in this strike had dealt with the dispute at its inception as its principal owners might have done had they been on the ground, there is reason to believe that no strike would have occurred."

COLORADO STRIKE. Even fiercer and more bitter than the struggle in Michigan was that in Colorado. The latter was marked by many bloody encounters between the strikers and the hired guards of the coal mining companies, or with the so-called State "militia." The strike started on Sept. 23, 1913—some 10 years after an earlier and similar outbreak—following the vote in favor of taking such action by the convention at Trinidad the week before. It was the contention of the operators that this decision of the conference was not indicative of the attitude of the majority of the miners, since they were not really represented there. On the other hand, the strikers pointed out that it was quite necessary that they hold their meetings in secret, because of the restrictions placed upon them, and it was in this manner that the representatives to the convention were chosen. Later, in a hearing before the Federal Industrial Relations Commission, the president of one of the companies admitted that the statement on this matter published by the operators was not altogether authenticated. Conferences with the managers of the mines were asked for before and during the week following the convention in order to endeavor to avert a conflict, but the operators refused, and they did not come to Trinidad in response to an invitation of the miners to reach an agreement. Speaking of the inability to bring about a meeting between the operators and the strikers, Senator Patterson said: "I believe that if they had granted a conference, they would have reached a settlement of the strike, no matter to what extent the unions had to withdraw their claims." According to the employers, conditions in the mining camps were all that were to be desired. They asserted that liberally conducted stores, which disposed of their wares at lowered prices, the right to trade where they pleased, checkweighmen when the miners so desired, and relatively high wages went to make the lot of the workingmen so satisfactory that before the strike many made signed statements to this effect. Opposed to this, the undemocratic conditions existing in the camps, which were owned and administered entirely by the companies, and abuse of their powers by the latter and their camp marshals, were among the primal causes of the discontent and extreme bitterness towards the employers.

Of the 12,000 or 13,000 workmen in the mines, the union claimed between 90 and 95 per cent were out on strike, while the operators maintained that at no time was their force reduced by more than one-half. Mr. John A. Fitch, who made an investigation of conditions in Colorado, estimated that approximately 60 to 70 per cent were out on strike. The strikers demanded first of all, the recognition of the union. This seemed to be, throughout, the vital point at issue. Second, they demanded a 10 per cent advance in wages on the tonnage rates, so as to make the remuneration about the same as that paid in Wyoming. The third demand was for an eight-hour day for all labor in and about the mines, and at the coke ovens; while the fourth asked for payment for narrow and dead work, which included timbering, brushing, and so forth. A checkweighman "at all times to be elected by the miners without any interference by company officials in said election" was the fifth; and the sixth demanded the right of the workingmen to trade wherever they pleased, and to choose their own boarding houses and doctors. Finally, they demanded "the enforcement of the Colorado mining laws, and the abolition of the notorious and criminal guard system which has prevailed in the mining camps of southern Colorado for many years."

The operators, on the other hand, replied to the first demand by stating that they would be required, should they recognize the union, to sign a contract by which they would have to collect the dues, fines, and assessments that the labor organization might levy against the workmen. Recognition, too, would have been altogether unwise, for it would become necessary for 90 per cent of the coal miners—then nonunion men—to join the organization, or else lose their jobs; and would mean the absolute closing of the "open shop" which had always existed in the State. Moreover, the operators were especially adverse to making contracts with the United Mine Workers, because of the legally irresponsible character of the latter—not being incorporated—and because they considered it a criminal organization. In proof of this latter, the operators pointed to the happenings in West Virginia, and the several indictments against the union. In answer to the second demand, it was pointed out that the wages in Colorado were already higher than in other parts of the Union, and that to increase them further would have been "little short of business suicide." An eight-hour day has already been enacted by the Colorado Legislature, but had been granted to the workers before this time.

The fourth demand, the operators contended, had no basis, for narrow and dead work had been paid for during past years, and to show that the men were well recompensed, pointed to the relatively large earnings of miners when working full time. The right of having checkweighing, it was also said, had been for many years the privilege of the workmen, and in some of the mines the laborers took advantage of this. Furthermore, the men could trade where they pleased without being prejudiced against, and could choose their own boarding house without being interfered with; but the companies usually required all their men to contribute a certain sum each month towards the maintenance of well-organized and conducted hospital departments where the workmen and their families were given free medical attendance. And finally, it was contended that an excellent general mining law had been passed by the Colorado Legislature, and that the State authorities were well able to enforce the statutes.

The struggle became so bitter at times that there were pitched battles. Camps were set up by the strikers, wherever possible, close to the mines, so that strikebreakers would have to pass these colonies to get to work. On the other hand, the operators, anticipating trouble, hired guards to defend the properties. These mercenaries were equipped with arms and ammunition, although the operators have contended that the strikers were, at the very beginning of the struggle, provided with weapons. Strikers and militia soon clashed. At least four "battles" were reported during October and November, 1913, and in these several were killed. On the 29th of October the militia arrived, and until the spring of 1914 comparative peace was maintained. The miners held that the make-up of the militia gradually changed until it included many—if not most—of the companies' hired men. As a result, the feeling between the militia and strikers became intense, and on April 20 there occurred another armed conflict. The tent colony at Ludlow was burned, and 11 children and 2 women, who had hidden in caves, were found suffocated. There were other conflicts in the next few days, and Federal troops were finally called to the scene, and order was again brought to the regions affected by the strike. These troops were not recalled until the opening of 1915, when matters had already been settled.

In February a Congressional committee investigated conditions in Colorado; and after the termination of the dispute the Federal Industrial Relations Commission held hearings in which many interesting facts were brought out. After several attempts at mediation had failed, President Wilson appointed a commission which submitted a plan for settlement—the main feature of which was a three years' truce—but the operators promptly rejected it, although the miners readily accepted. The strike was ended in December when the strikers went back to work without gaining their point.

ATLANTA TEXTILE STRIKE. A bitter industrial dispute begun in early summer was the strike of the employees of the Fulton Bag and Cotton Mills of Atlanta, Ga. The demands of the workers were: (1) the reinstatement of those discharged for joining the union; (2) the elimination of children under 14 from the factories; (3) a 54-hour week for women and children; (4) an increase in wages. Strikebreakers, made up chiefly of negroes and children, were called in, and the Cotton Manufacturers' Association loaned skilled workers who received extra pay to fill the places of those in the conflict. Thus, the employers sought to minimize the effect of the strike. Preceding this strike, there was another which came as a result of the discharge of 72 workers because of their union activity. Many of the strikers were evicted from their homes, which resulted in much hardship and privation.

ARKANSAS COAL MINES. Another violent conflict in the mining industry was that in Arkansas in which Federal troops were called out to enforce a court order. The trouble first started on April 6, when the Bache-Denman Coal Company decided to operate their mines on the open-shop plan, although union labor had hitherto been employed. A few months later the company filed a voluntary bankruptcy petition, stating that five of their plants had been destroyed. Mr. Franklin Bache, president of the corporation, was appointed receiver, but the running of the mines was made impossible by the rioting of the strikers, which culminated in the blowing up of the mine at Prairie Creek. Work was resumed in November under the protection of the Federal troops. At the close of the year negotiations were opened with a view to selling the mine to the union.

BUTTE, MONT. On June 13, which is Miners' Union Day, in Butte only 500 of the members of the Western Federation of Miners marched on the streets, and they were attacked as they paraded by the majority of the members. The latter then proceeded to the union hall, and blew up the safe, taking over $1000 from it. A new union, known as the Butte Mine Workers' Union, was organized, and matters were peaceful for a time.

In an attempt to bring about a conciliation, Charles H. Moyer, president of the Western Federation of Miners, came to the scene, but was forced to beat a hasty retreat. Excessive assessments, and the unsanitary and undesirable conditions that exist in the mines were the chief grievances of the rebelling section. They maintained that these conditions existed because of the control of the union by company men. Moreover, the wages of miners have not increased in proportion with the pay in other trades, there having been no change in the scale since 1907. Much rioting and violence occurred and in September troops were sent to Butte, and the city placed under martial law.

WESTINGHOUSE STRIKE. This strike, involving 10,000 employees, started on June 5, for the purpose of obtaining recognition of the union. The employers replied by stating that they intended to keep an open shop, but would not discriminate against unionists. On the suggestion of J. P. Jackson, Commissioner of Labor and Industries of Pennsylvania, the Secretary of Labor appointed Charles W. Mills and Patrick Gilday as commissioners of arbitration, and after many joint conferences a settlement was finally effected.

OHIO MINES. On March 31 nearly every mine in Ohio was closed down because the operators refused to renew contracts with the miners in anticipation of the new law which required the payment of laborers on a run-of-the-mine basis, instead of the screen payment plan which always existed in Ohio previous to this statute. Maintaining that they would be unable to compete with operators in Pennsylvania and Indiana, where the old plan of remuneration existed, and, further, that the United Mine Workers would demand that the same pay be granted as under the old agreement, the managers decided that it was better to close down. The miners signified their willingness to continue their work until the new law came into operation in May. This was, however, rejected by the operators, and a wage parley a few weeks later which attempted to bring about an agreement was unsuccessful. On May 17, a walkout was declared when the operators closed down. One of the companies, in order to test its constitutionality, brought suit for an injunction to restrain the carrying out of the law. In July there was much violence in the mining districts, and troops were needed to restore order. Towards the close of the year the companies tried to reach an agreement with the miners, but were unsuccessful, and declared their intention of evicting those who would not pay the rent since the beginning of the dispute. At the opening of 1915, the Secretary of Labor delegated former Commissioner of Immigration Daniel J. Keeffe and H. Davies to attempt to bring about an amicable settlement. The operators decided to reopen the mines and, it was said, were willing to give the strikers preference for the places.

Harriman Lines. The strike of the employees of the Illinois Central, and Harriman Lines continued through the year. One of the longest industrial conflicts known, this dispute began, or rather became effective, on Sept. 30, 1911. Nonrecognition of the union and refusal to meet the representatives of the workers were assigned as the causes by the strikers. According to the latter, there were about 35,000 involved, including members of the International Association of Machinists, Brotherhood of Railway Carmen of America, Brotherhood of Boilermakers and Helpers, Brotherhood of Blacksmiths and Helpers, and several kindred organizations. There seemed to be no immediate prospects of settlement.

Other Strikes in the United States. In addition to the strikes noted above, there were a considerable number of lesser troubles, but no extensive disturbances. In New York City, there were 3000 ladies' tailors on strike for higher wages, and in the same city 2000 chandelier workers out demanding better hours and wages; and for similar reasons there were disputes among the knitters, the umbrella makers, and woodworkers. The shoe workers of Lynn also fought for higher wages; and in the shirt industry at Leominster, Mass., the workers opposed an alleged cut in wages, while the garment workers of Boston sought union conditions in the shops. Among other strikes were: one against rules and for better wages among the potters in Atlantic City; one on account of the wage scale of electric workers in Quincy, Ill.; one among cutters in the shoe industry at Keokuk, Iowa, for increased pay; one of the motormen and conductors of the street car lines at Fort Smith, Ark., in behalf of the union. There were also small outbreaks among the boilermakers in New Orleans, the construction workers in East Waco, and iron workers at Dallas, Texas, the garment makers of St. Louis, and the miners in Washington, Pa. Furthermore, there was a lockout of the iron workers in the building trades of Buffalo.

Great Britain. There were no strikes which attracted world-wide attention during the year. The dispute of the unskilled workers in Birmingham was settled early in the year (see Arbitration and Conciliation, Industrial); but the unrest amongst the farm laborers continued. The wages of the latter are still very low. Nearly all labor troubles were brought to a close at the inception of the gigantic European War.

With the advent of the new year came the coalheavers' strike in London. These coal-porters and coal-trolley men, about 10,000 of them, demanded an increase in pay which the employers refused to grant. Since a large proportion of the population of London used coal, this act on the part of the workers in the middle of the winter made quite a commotion. In about two weeks, however, the increase was given, or was promised, and the strikers returned to work.

A lockout, which at many times promised to become national, was that in connection with the building trades. It started with a refusal on the part of the union workers to sign a contract by which the employees agreed to work with nonunionists if required to do so, or pay a penalty of $5 for every time that they refused. The London Master Builders' Association, which has a very strong organization, maintained that this was necessary to prevent sectional strikes in the industry. This action, however, vitally affected the unionists and they stood their position in spite of the threat of a lockout. Time and again the men of the allied unions, whose members were greatly augmented by the flocking to them of the nonunionists when the lockout was declared, rejected the proposals of the masters although the laborers suffered much privation. Some of the smaller trades were in favor of accepting, but were greatly outvoted. Towards the end of May the London employers requested the National Federation of Building Trades' Employers to take up the case and it seemed for a long time as if a general lockout were imminent. At the outbreak of the war, after the lockout had lasted over six months, it was finally terminated by a temporary arrangement. Almost 40,000 were involved in this dispute.

War also put an end to the marine engineers' strike which had begun to assume great proportions and was several weeks old at the time of settlement. After having tried to induce the shipowners to grant increased rates of pay in proportion to the amounts secured by the seamen and firemen as the result of their huge strike in the past few years, several thousand of the men struck. It seems that they had been omitted when added wages were given to the other employees of the shipowners. As noted above, at the beginning of the hostilities in Germany, this struggle was concluded and, curiously, much of the coal which otherwise would have been shipped from the country, was held for home use. An effective strike, though, was that of 3000 men engaged in repair work for the Cunard Line in Liverpool. On May 29, the laborers were granted a decrease in the number of hours of work after they had been out on strike but a single day.

There were several other minor strikes occurring throughout the country. The Yorkshire coal miners struck late in March, but soon gave up the conflict. Unrest among municipal employees cropped out in London and other cities. The brewery workers, who had in the past lagged behind other laborers, went on strike, demanding an increase in wages.

Dublin. A strike begun by the Transport Workers' Union of Dublin under the leadership of James Larkin, in August, 1913, collapsed early in the year. The strike had caused fully 30,000 persons to be thrown out of work, and had resulted in extraordinary privation and suffering. Some relief had been furnished by the British Trade Unions. The strikers returned to work without signing any agreements.

One effect of the strike was an inquiry into conditions which developed such revolutionary feelings. The Dublin Housing Committee reported nearly 28,000 people to be living in dwellings unfit for human habitation. Conditions were declared to be abhorrent both from sanitary and moral points of view, and the blame was placed on the municipal corporation. An extensive building programme in the interests of the working class families was advocated.

South Africa. Labor disturbances in South Africa began in July, 1913, with a violent strike by the Rand miners, were continued by a threatening upheaval among the Hindus in Natal, and still continued in 1914 by a strike of the employees of the South African State Railway. The immediate cause was the laying off of hundreds of employees as a result of a retrenchment policy by the State railway administration. Prompt action by the government immediately followed. Railway stations were placed under guard; reserves were called out; an embargo was placed on arms and ammunition; labor leaders were arrested on the charge of sedition; saloons were closed. The strikers resorted to sabotage by disabling switches and brakes; in January a general strike was called. Premier Botha at once declared the whole country under martial law and called out 20,000 militia. Moreover, hundreds enrolled under local committees of public safety. Extreme repressive measures were resorted to. This military demonstration was said to have cost the government about $2,000,000. Meanwhile, various labor leaders were taken from prison and dispatched to England without judicial procedure.

Premier Botha and Gen. Jan Smuts, Minister of Defense and Finance, defended the government's action on the ground that the strike was a revolutionary movement and that only extreme measures would have prevented a native uprising, anarchy, and murder. A bill was later introduced to indemnify the government for all its actions under martial law. The labor leaders, however, asserted that the Boers and the capitalists were endeavoring to drive white labor out of South Africa and replace it by native labor. The deported strike leaders made an appeal to the English people. Mr. Ramsey McDonald, leader of the Labor party, demanded in Parliament that Viscount Gladstone, Governor-General of South Africa, be ordered to refuse assent to the Indemnity Bill. His motion was defeated overwhelmingly. As a result of the strike, the Laborites were mostly victorious in the Transvaal Provincial Council elections; and also in the Cape Town by-election, when the first Labor member was returned to the Union Parliament. The Peace Preservation Bill, which was designed to deal with strike disorders and which prohibited picketing and permitted the deportation of persons convicted of violence, was withdrawn, probably as a consequence of the show of strength by the union.

Italy. For the general strike occurring in June, see the article on Syndicalism.

Spain. There was a new outbreak of the Rio Tinto copper miners' strike early in the year, and some 12,000 were made idle. A demand for an increase in wages was the cause of the original trouble in these mines which started in April, 1913, and involved 15,000. At first the Rio Tinto Mining Co. refused to arbitrate, but by the middle of November, 1913, the government induced the management to submit acceptable terms to the men, and the latter returned to work. The dispute in January, 1914, was a recurrence of the earlier struggle, and through the mediation of arbiters the miners were again induced to resume their places. A shipping strike, which greatly interfered with foreign trade, also occurred during the year.

STRONG, Elnathan Ellsworth. An American clergyman of the Congregational Church, died April 2, 1914. He was born at Hardwick, Vt., in 1832; graduated from Dartmouth College in 1852; studied theology at the Andover Theological Seminary in 1855, and in 1859 was ordained to the Congregational ministry and became pastor at South Natick, Mass. He held that pastorate until 1865, when he became pastor of a church in Waltham, remaining until 1878. In that year he was appointed secretary of the American Board of Commissioners for Foreign Missions, and retained that post until his death. He was the editor of the *Missionary Herald* from 1879, and also edited *Mission Stories of Many Lands*, 1887; *In Lands Afar*, 1897.

STROUT, Sewell Cushing. An American jurist, died Aug. 10, 1914. He was born in Wales, Me., in 1827, and received an academic education at Portland. In 1848 he was admitted to the bar and practiced in Portland from 1854 to 1894. In the latter year he was appointed judge of the Supreme Court of Maine, serving until 1908. He received the honorary degree of A.M. from Bowdoin College.

STUBBS, Joseph Edward. American clergyman and educator, died May 27, 1914. He was born in Ashland, Ohio, in 1850, and in 1873 graduated from Ohio Wesleyan University, after which he studied theology at the Drew Theological Seminary, graduating in 1875. He entered the Methodist ministry, but his life was spent chiefly as an educator. In 1876 he was chosen president of Baldwin University at Berea, Ohio, and in 1894 left that university to become president of the University of Nevada, which position he held until his death. He was a delegate to many great religious conventions, and was a permanent member of the American Commission for the Study of Agriculture, Agricultural Finance, Production, Distribution, and Rural Life.

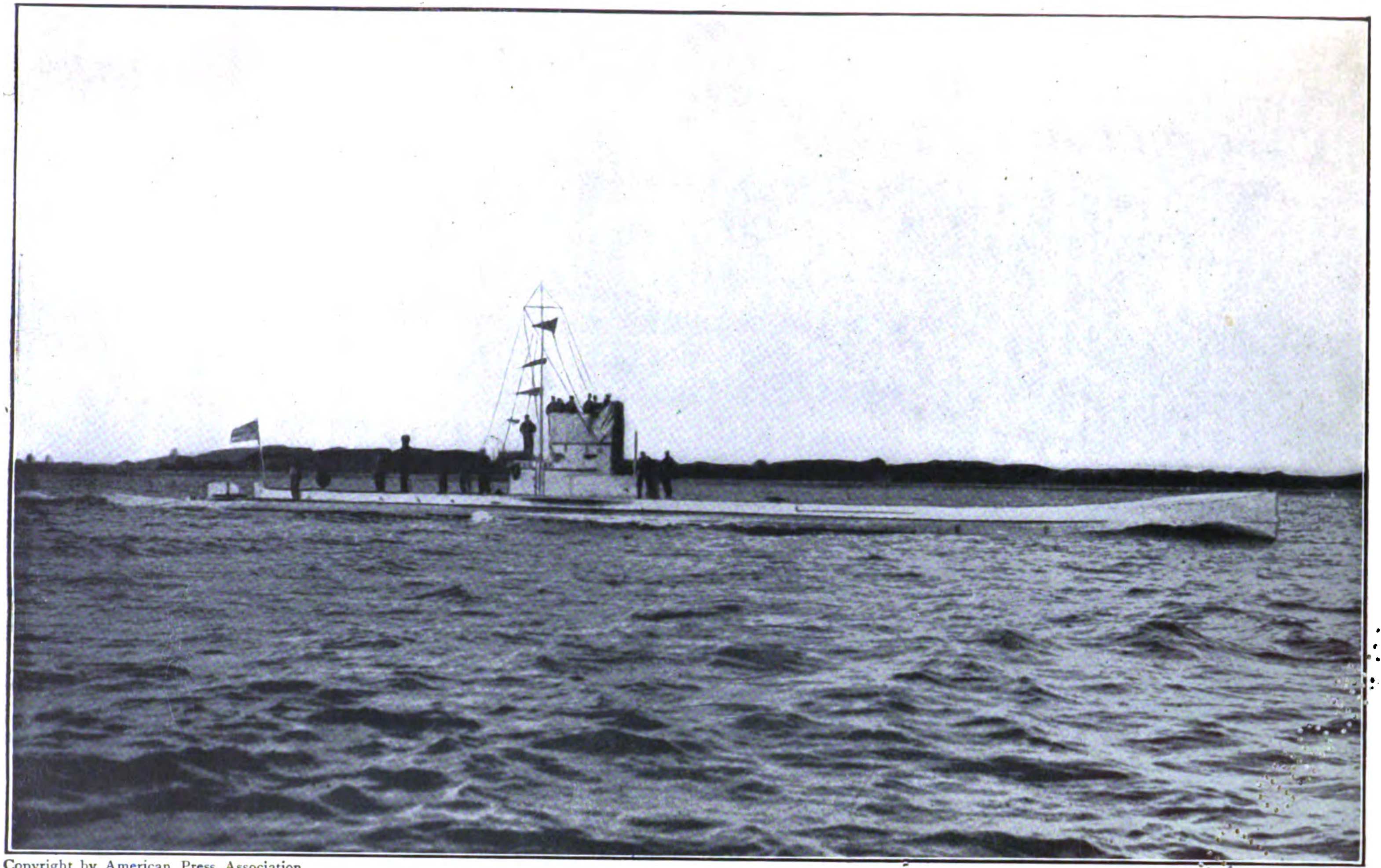
STUDENT CAMPS. See Military Progress.

STURDEE, Sir Frederick Charles Doveton. See War of the Nations.

SUB-ELECTRONS. See Physics.

SUBMARINES. As the submarine has improved in habitability, manageability, speed, radius of action, and certainty of operation, its relative importance in naval war has advanced with great rapidity. In June, 1914, Rear Admiral Sir Percy Scott of the British navy wrote a letter (for fuller details see Battleships) to the London *Times* on the subject of the "Submarine Menace." In this letter he stated that the submarine had eliminated the battleship, would prevent it from performing its former functions, and would destroy it if it attempted to perform them.

In the great European War, up to the close of 1914, the submarine had by no means fulfilled the expectations even of its moderate advocates. The conditions were very favorable for submarine operations—a tremendous fleet in



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A GERMAN SUBMARINE OF 1914

a limited area, and its ports at short distances from the enemy's possible submarine bases. Yet five months of war failed to break the British blockade of the German fleet, or even lighten it. Not a single German cruiser had gotten by it in either direction—to prey upon British commerce or to reach the protection of German guns and mines. The following British ships had been sunk by submarine attack: *Formidable* (battleship, 15,000 tons, launched 1898), *Aboukir, Hogue, Cressy* (armored cruisers, 12,000 tons, launched 1899–1900), *Hawke* (protected cruiser, 7350 tons, launched 1891), *Pathfinder* (light cruiser, 2940 tons, launched 1904), *Niger* (gunboat, 810 tons, launched 1892), and the Germans claimed that one of their submarines sank the *Bulwark* (sister ship to the *Formidable*). Not one of these ships was less than 10 years old, some were more than 20; all except the *Pathfinder* would have been condemned and relegated to the sale list in a very short time had not war broken out. Their age and consequent decreased value was the reason they were so exposed to attack, by being made the supporting line for the destroyers, scout ships, mine layers, mine sweepers, etc.

Several questions naturally arose. Where was the British main fleet? Up to the time of the German attack on the British coast it was probably north of Scotland, and the greater part was likely to be there at the end of the year. Could not the German submarines or air craft find any part of it? Or if found, did their attacks fail? If they did succeed, why had the facts been concealed by the attacking forces? Where were the German submarines? At the end of the year we had heard of only half a dozen. Were the others sunk, scouring the North Sea in vain, or being held for some future grand coup? Where were the British submarines? What rôle were they playing? Were the German vessels hidden beyond their reach? Until these and some other questions could be answered it was impossible to determine the submarine's value, but if we were to judge it solely by its performance during 1914 we must unhesitatingly pronounce it a disappointment. That it could do more than it had done, its few successes indicated, and during future years it might achieve much that its ardent advocates claimed it would.

SUBMARINE DESIGN

TYPES. Two well-defined types of submarines already had been developed by 1914, and a third was receiving some consideration. These were coast submarines, cruising submarines, and submarine cruisers. The coast submarines were from 250 to 500 tons displacement when submerged. They are or should be fitted with numerous tubes and good speed, but only a fair cruising radius (50 miles submerged, 500 miles on the surface). The cruiser submarine is larger, has higher speed, and a much longer cruising radius. There were no submarine cruisers built up to 1914, though all of the larger cruising boats carried 3-inch guns. The nearest approach to the type were the 5000-ton boat suggested by the Russian officers, and the new boat for the U. S. navy which was probably to have a displacement, when submerged, of at least 1500 tons. The following table shows the number of boats built and building in the various navies in 1914, and the displacement tonnage, when submerged, of the largest boat built, building, or definitely proposed.

Nation	*Built*	*Bldg.*	*Largest boat*
Argentina	..	..	...
Austria	8	8	860
Brazil	8	..	870
Chile	2	..	400
Denmark	6	6	200
France	78	19	1053
Germany	27	10	890
Great Britain	85	10	810
Greece	2	1	453
Italy	20	6	463
Japan	13	2	820
Netherlands	8	2	387
Norway	4	1	255
Peru	2	1	458
Portugal	1	8*	850
Russia	26	12	600
Spain	..	8*	400
Sweden	6	8	226
United States	32	17	1500*

* Proposed.

The figures in the foregoing table are to be accepted as approximate only. Details of their submarines are jealously guarded secrets in all navies. Great Britain, Germany, and Russia might, and probably did have, under construction submarines larger than are mentioned here.

ARMAMENT. All large submarines carried guns of 3-inch calibre or greater, and some carried anti-aircraft guns. It was evident that if they were to make serious use of guns, either for protection or offense, they must be much larger and carry heavier pieces, for it was manifest that a submarine's real enemies or objective cannot be injured by the fire of a couple of 3-inch guns. The torpedo of the submarine is likely to take on a character of its own. Since a submarine must approach quite near its objective before firing its torpedo, the range of the latter is comparatively unimportant. The considerable weight assigned to securing long range might well be devoted to increase of explosive charge. Unless this was done the battleships of the near future might be nearly immune to attack, for internal and external armor extending down far enough to cover the whole side to the turn of the bilge was having more than a casual consideration. The very fatal results of the German submarine attacks indicated that the Germans were using torpedoes with large bursting charges or a very violent explosive. If it is thoroughly understood that there is no necessary limit to the size of a submarine's torpedo, the magnitude of the problem of protecting a battleship by nets or underwater armor may be appreciated.

SPEED. The speed of submarines both on the surface and when submerged is, of course, of the utmost importance. It conduces to successful pursuit of the enemy, successful attack, and successful escape. Speed means increased length and depth of hull of the boat and these dimensions are increasing actually and relatively to the beam in all new highspeed boats. A surface speed of 20 knots and a submerged speed of 12 will necessitate a ratio of length to beam of 12 or 13 to 1; and boats in 1914 under consideration or construction were aiming at these speeds.

STEERING. The successful development of the gyro compass added enormously to the safety and efficiency of the submarine. The boat no longer depends upon occasional glimpses from its periscope for the purpose of determining its direction. The newspaper accounts of the "blind" submarine whose periscope had been destroyed were interesting fiction so far as concerns boats which are fitted with gyro compasses. The gyroscope was also likely to be used as a stabilizer to control rolling and diving.

PROTECTION AGAINST SUBMARINE ATTACK. The protection of surface vessels against submarine attack consisted in speed, watchfulness, and subdivision. It is evident that these were no longer sufficient. Nor was underwater armor likely to prove wholly satisfactory. It seems probable that the submarine must be met in its own element by destroyers which are also submarines; and that as far as possible submarines must be destroyed in their own base harbors. To what extent air craft can hover over, detect, and destroy submarines or bring about their destruction is not yet determined.

SUBWAYS. See RAPID TRANSIT; TUNNELS.

SUDAN, ANGLO-EGYPTIAN. An African country south of Egypt under the joint administration of the British and the Egyptian governments. It has an area of 984,520 square miles, with a population estimated in 1911 at 3,000,000. The capital is Khartum, with 18,235 inhabitants in 1909. Khartum North, on the Blue Nile opposite the capital, had 35,285; Omdurman, the former Mahdist capital, on the White Nile, 42,779. Much of the country is fertile and well adapted to the raising of cotton and food grain; in 1913 the imperial government granted a loan of £E3,000,000 with a view to developing the Sudan as a cotton-growing country. A complete project for the irrigation of a block of land in the Gezira has been prepared, comprehending a dam on the Blue Nile at Makwar, a canal about 70 kilometers in length, and the necessary canalization. The 1913 Nile flood was the lowest recorded during a hundred years, being even lower than that for 1912. Water levels through the Dongola province have been two meters below the average of the last few years, with the result that none of the basin has received any water. A plentiful rainfall in Kordofan has compensated somewhat. Under irrigation by artificial means in 1913 were 130,000 feddans; under natural irrigation by flood, 123,000, and by rain 2,050,000. Progress is being made in the work of increasing and conserving the gum forests of Kordofan. Outbreaks of contagious cattle diseases have been unusually numerous.

The imports of merchandise for the year 1911 were valued at £E2,273,949, and the import of specie £E94,364 public and £E192,925 government. Exports, £E1,376,958; reëxports, £E74,894; reëxports of specie, £E70,416; transit inwards, £E22,723; outwards, £E31,002. For 1912, imports, £E1,967,429; imports of specie, £E45,082 public, and £E248,275 government; exports, £E1,373,119; reëxports, £E92,657; reexports of specie, £E1516; transit inwards, £E22,032; outwards, £E24,416. The budget for 1913 balanced at £E1,547,200, and that for 1914 at £E1,644,000. It has been decided to change the form of the estimate, to leave out figures for the local provincial services, a change made necessary by new local taxation ordinance under which revenue and expenditure must be shown separately for each town and rural district. Railways in operation 1911, about 1500 miles; net profits for the year 1913, £E120,380.

The traffic in slaves has been almost entirely suppressed. The smuggling of slaves from Abyssinia and across other frontiers has been greatly diminished, and though cases of kidnapping occur they are always followed up, usually with success.

Lieut.-Gen. Sir Reginald Wingate was Governor-General of the Sudan and sirdar of the Egyptian army in 1914.

SUFFRAGETTES. See FEMINISM; WOMAN SUFFRAGE.

SUGAR. There has been much anxiety over the beet sugar industry in the United States, and a determined effort has been made to save it from the tariff in 1916. The area planted to beets in 1914 was 18 per cent less than in 1913, representing a decrease in all the States except Idaho and Utah. Thirteen sugar refineries were reported to have closed down. Early in the fall, as a result of the European conflict, England made a bid for American sugar, and the price advanced. The beet sugar companies informed the growers that the old rate for beets would be maintained in spite of the contracts for the year at a reduction.

The United States Department of Agriculture in November gave returns from the beet sugar factories showing an area of 486,000 acres of beets, with a probable production of 5,147,000 tons of beets and of 664,000 tons of sugar. Willett and Gray estimated the crop (December 10) at 570,000 tons of sugar, as compared with 655,298 tons in 1913, and 624,064 tons in 1912. The same authorities estimated the Louisiana crop of cane sugar at 175,000 tons, as compared with 261,337 tons in 1913.

Soon after the war broke out there was great concern for the next year's supply of sugar-beet seed, which comes from Germany. With the aid of the United States government in preparing the way, representatives of the industry went abroad and purchased 70,000 bags of seed, at a cost with all expenses less than American factories have been paying for seed in the past. This enterprise, it is thought, will assure, in 1915, the largest crop of beet sugar ever produced in the United States.

In consequence of the cutting off of the British supply of beet sugar from Germany, Austria, and Belgium, the British government purchased, in the fall, 900,000 tons of raw sugar in Demerara, Java, Mauritius, and elsewhere. This is reported to be by far the largest purchase of sugar ever made, and it is to be sold virtually at cost to the refiners, who agree to sell it at a fixed price based on the cost, plus a fair manufacturer's profit.

The world's sugar crop of 1914, as estimated by Willett and Gray (December 10), was as follows: United States 751,000 tons; Porto Rico 325,000 tons; Hawaii 565,000 tons; Cuba 2,600,000 tons; West Indies and Lesser Antilles 294,500 tons; Mexico 110,000 tons; Demerara 100,000 tons; Brazil 200,000; Argentina 200,000; Peru 145,000; Surinam and Venezuela 16,500; Central America, 22,000; British India 2,400,000; Java 1,280,000; Formosa 180,000; Philippine Islands 243,000; Australia and Fiji Islands 342,000; Mauritius 265,000; other African countries 230,000; Spain 10,000; and the beet sugar crop of Europe 5,700,000 tons. This is a total of 15,979,000 short tons of cane and beet sugar, an estimated decrease in the world's production of 2,634,792 tons. The war has unsettled the export market for German beet sugar, its export to certain neutral countries having been prohibited, and the government has advised the feeding of sugar beets to live stock.

The United States Department of Agriculture published during the year the statistics of sugar in the United States and its insular possessions from 1881 to 1912 (*United States Department of Agriculture Bulletin 66*). This showed a great increase in sugar consumption in the period covered—from 2,500,000,000 pounds in 1881–85 to 7,000,000,000 pounds in 1901–10, while the per capita consumption nearly doubled, averaging 86.85 pounds in 1914. Of the domestic sugar consumption, continental United States supplied, in 1914, 20.6 per cent, the insular possessions 21.9 per cent, and Cuba 57.5 per cent. The United States, with its insular possessions, now ranks among the first four of the sugar producing countries of the world.

SULLIVAN, JAMES EDWARD. An American athlete, official, and publisher, died Sept. 16, 1914. He was born in 1862 in New York City, and was educated in the public schools of that city. From 1878 to 1889 he was connected with the publishing house of Frank Leslie. He founded the *Athletic News*, one of the first athletic papers in the United States devoted to tracking and field athletics, and was also for several years owner and editor of the New York *Sporting Times*. He was the publisher of *Spalding's Athletic Library* and the editor of *Spalding's Official Athletic Almanac*. He started his career as an athlete in 1877, when he entered a walking contest in New York City; this was followed by a long series of victories in walking and running contests. He ceased active competition in sports in 1884, and several years later was one of the organizers of the American Athletic Union, which grew to be the most important athletic organization in the United States. In 1893 he was appointed chairman of the Amateur Athletic Union Committee, which supervised the World's Fair meet at Chicago. When the Olympic games revival was held in Paris in 1900 he was appointed by President McKinley assistant American director, and at the Olympic games of 1904 at St. Louis he was chief of the department of physical culture. He was special commissioner at the Olympic games in Greece in 1906, and in England in 1908. For the help he rendered to the Greek committee at Athens in 1906 he was decorated by King George I with a golden cross of the Royal Order of the Saviour. At the Jamestown Exposition of 1907 he was an honorary director, and he was American commissioner at the Olympic games in 1912. He was a member of the New York City board of education, for many years was prominent in the organization and conduct of games in the city schools, and at the time of his death he was the foremost man in amateur sports in the United States.

SULPHUR. The production of sulphur in the United States in 1913 was 311,590 long tons, valued at $5,479,849, as compared with 303,472 long tons, valued at $5,256,422 in 1912. The production of Sicilian sulphur amounted, for the year ending July 31, 1913, to 346,213 long tons. Thus the United States is rapidly gaining on Sicily, which, at the present time, is the leading sulphur-producing country in the world. Sulphur, in 1913, was produced in three States, Louisiana, Texas, and Wyoming, the chief production being from Louisiana. The total quantity of sulphur imported to the United States in 1913 was 22,605 long tons, valued at $448,564, and there were exported 89,221 long tons, valued at $1,599,761. For sulphur as a plant food see HORTICULTURE.

SUN YAT-SEN. See CHINA, *History*.

SURGERY. The cutting or wounding of the vagus nerve has generally been regarded as a grave accident when occurring during a surgical operation, but Exner and Schwarzmann have severed the nerve in a number of cases for the relief of gastric crises in locomotor ataxia. They report many experiences which show, apparently, that the vagus forms a portion of the reflex arc which is involved in the production of these pains, and by severing the nerve this arc is interrupted and the pain relieved. On this assumption 14 cases have been operated upon with the result that 7 of the patients were completely relieved from their crises, 2 cases improved, and 2 were negative. None of the patients appeared to be injured by the operation. In another series of 6 cases, in which the operation was performed by other surgeons, 3 cases were cured, 1 case not benefited, and 1 made worse. Another operation with the same object in view, which has been noted in previous issues in the YEAR BOOK, consists in the resection of the posterior spinal nerve roots. The percentage of cures under both methods is about the same, namely, 50 per cent, but vagotomy is the simpler operation. Exner and Schwarzmann resect about 1 cm. from the vagus on each side.

Spinal surgery, especially that type connected with tuberculosis of the spine, shows a constant improvement in results. During the past year or two efforts have been made to shorten the period of wearing braces and other orthopedic apparatus by the implantation of bone splints (Albeer's operation). It is to be noted that the diseased area itself is not touched, the operation consisting in the formation of an artificial groove in the spinous processes of the vertebræ and the insertion therein of a thin stick of bone taken from the tibia. The transplant is about five inches long, and is sutured into position by strong catgut and silkwormgut. The operation is more suitable for adults than for children, but in the latter it is claimed that the period of treatment is shortened several months to a year, when this operation is successful. There is always the chance, however, that the transplanted bone may not live or may suppurate.

The controlling of hemorrhage in large organs, such as the liver, brain, kidneys, etc., has always been a difficult matter, and various experiments have been made to improve surgical technic in this direction. Bowman advocates the use of flaps of adjacent tissue, whether muscle, fascia, or omentum, which flaps may be used with a pedicle or may be detached entirely from their natural situation. It is not known whether the undoubted efficacy of such flaps is due to chemical or mechanical action, or to both. The older methods of controlling hemorrhage by tampons, ligatures, and sutures were unsatisfactory because of the degeneration, and sometimes necrosis, which they produced in the neighboring tissues. Experimental wounds were made by Waljoschke and Lebedew on the kidneys, liver, and spleen of dogs, and these wounds tamponed with fascia. From their subsequent postmortem findings they conclude that fascia acts as a living tampon, controlling active bleeding and subsequent hemorrhage; that it simplifies suturing, and avoids the necessity for placing deep sutures; that this material is non-irritating to the organ and does not produce degeneration or interfere with function afterward.

INTESTINAL STASIS. There was a marked tendency on the part of surgeons to regard this condition as a purely surgical problem. According to Sir Arbuthnot Lane, who coined the expression, "intestinal stasis" is a stoppage or retardation of the passage of the intestinal contents at certain points in consequence of the presence of angulations, kinks, knuckles, or constrictions of the gut brought about by the growth of fibrous bands or peritoneal processes. Lane and his followers regard the intestinal canal merely from the standpoint of drainage, and attribute the indefinite congeries of symptoms denominated autointoxication to retention and absorption of fecal poisons. The origin of the bands above alluded to is not settled. They have been considered as developmental, as products of inflammation in neighboring organs, i.e., the gall-bladder, liver, and appendix, and as a result of low-grade bacterial infection within the gut itself. Different bands have been described by several surgeons in relation to various parts of the intestine, and they are variously known as "Jackson's membrane," "the bloodless fold of Treves," "Lane's kinks," etc. Surgeons claim that by severing these constrictive bands, and restoring the normal patency of the intestinal canal, intestinal stasis, and consequently autointoxication, is entirely relieved, unless there be insufficiency of the ileocæcal valve. "Short-circuiting" of certain parts of the bowel which are redundant, or which are apparently useless, from their malposition or their pathological condition, is also practiced by many surgeons. It means the resecting of a greater or less length of the bowel, and suturing the severed ends together. Diagnosis is largely made by means of the X-ray after the patient has ingested bismuth to render the intestine opaque to the rays. Operation, however, is not advised in every case in which the X-ray reveals malposition, or kinks, or angulation. About 80 per cent of these cases, it is said, are relieved by the administration of liquid vaseline, Russian mineral oil, etc., and the wearing of a proper abdominal support. It is only fair to say that many internists scout the whole theory of Lane and his followers, and vigorously combat surgical interference in such cases, except where there are very definite pathological lesions present. They point out that the intestines may be matted together extensively after peritonitis, and yet the patient show no sign of autointoxication; also that many individuals suffer from so-called intestinal stasis, and even obstinate constipation, without the production of autointoxication or apparently any interference with their general well-being. Consult Bainbridge, "Significance of Intra-Abdominal 'Bands,' 'Veils,' and 'Folds,'" *Boston Medical and Surgical Journal*, Feb. 19, 1914.

SUTTNER, BARONESS BERTHA VON. An Austrian peace advocate and writer, died June 21, 1914. She was born in Prague in 1843, the daughter of Field Marshal Count Franz von Kinsky. Her uncles were generals in the Austrian army and one of her ancestors was the warrior-poet, Theodor Körner. When a girl she was betrothed to Prince Adolph von Wittgenstein, but he died before the wedding day. When she was 35 years of age she fell in love with Baron Gundacar von Suttner, but the parents of both opposed the marriage and the couple eloped, going to the interior of Russia on their honeymoon, which took place in 1878, and there starting to work for a living. They became reconciled to their families, and although both were wealthy they continued to devote the greater part of their time to writing and study. Before her marriage the Baroness had already produced one book entitled *The Inventory of a Soul*, this was followed in 1890 by *Die Waffen Nieder* ('Down with the Arms'), a book which aroused all Europe to the horrors and iniquity of war. It was read by Count Muravieff, the Russian Foreign Minister, and he was so impressed with it that he called it to the attention of the Czar. Nicholas II read it, and, it is said, was so impressed that he issued the call for the peace conference at The Hague, in which all nations participated. The publication of this book put Baroness von Suttner before the world as one of the greatest advocates of world peace. She followed up her advantage in other books in which she argued that war is never justifiable. She edited a monthly magazine called *Die Waffen Nieder*, which was the organ of the International Peace Bureau in Berne, Switzerland. Baroness von Suttner was a warm friend of Alfred Nobel, and it is said that when he founded the peace prize he had her in mind, and in 1905 she was awarded it. The Baroness attended the peace conference in Boston in 1904 and again visited the United States in 1912, remaining for almost six months. Her husband died in 1902. In addition to the works mentioned above her writings include: *Schach de Qual* ('Check to the Pain') (1897); *Martha's Kinder* (a sequel to *Die Waffen Nieder* (1902); *Letters to a Dead Man* (1904); *When Cocks Fly Upward* (1914).

SVERDRUP RELIEF EXPEDITION. See POLAR RESEARCH, *Arctic*, section *Franz Josef Land*.

SWAMP LANDS. See DRAINAGE.

SWAN, SIR JOSEPH WILSON. An English inventor, died May 27, 1914. He was born in Sunderland in 1822. After serving an apprenticeship with a chemist in that city, he became a member of a manufacturing firm in Newcastle. This firm made photographic plates and Swan's experience resulted in the first rapid dry plate and in the first commercially practicable process for carbon printing in photography. He was one of the first to attempt the construction of an electric lamp using a filament of carbon. His first lamp of this kind, the filament being of carbonized paper, was made in 1860, nearly 20 years before Thomas Edison produced his first successful lamp of a similar type. Sir Joseph also conducted experiments and developed new methods in connection with the measurement of electric currents and improved accumulators. He was elected a member of the Royal Society in 1894 and was knighted in 1904.

SWARTHMORE COLLEGE. An institution for higher education, founded at Swarthmore, Pa., in 1869. The enrollment in all departments in the autumn of 1914 was 434, and the faculty numbered 48. Dr. George A. Hoadley, professor of physics, retired after 25 years of service, and Dr. Harvey C. Hayes was appointed to fill the vacancy. The college received during the year three gifts amounting to $71,891. The productive funds amounted, at the end of the collegiate year 1913–14, to $1,615,164, and the income to $289,689. The library contains 26,000 volumes. The president is Joseph Swain, M.S., LL.D.

SWAZILAND. A British South African protectorate, covering approximately 6536 square miles. Colored inhabitants numbered 98,876 in 1911, whites 1083. Gold (13,011 ounces, valued at £55,266 in 1912–13) and tin (385 tons, valued at £37,946) are mined. There are about 59,000 cattle, and 170,000 native sheep in the country. No trade statistics are kept, Swaziland being included, for customs purposes, with the Union of South Africa. Revenue 1911–12, £58,437; expenditure £58,543; debt March 31, 1913, £100,000. The paramount chief is Sobhuza, under the regency of Nabotsibeni, widow of Nbandini. The resident commissioner was R. T. Coryndon, in 1914.

SWEDEN. A constitutional monarchy of northern Europe, occupying the eastern part of the Scandinavian peninsula. The capital is Stockholm.

AREA AND POPULATION. The area in square kilometers, the population according to the census of Dec. 31, 1910, and the population according to the estimate of Dec. 31, 1912, are given by prefectures in the table below.

EDUCATION. Primary instruction is free and compulsory, and the schools are maintained by local taxation with State aid. The system is efficient, the schools are well attended, and illiteracy is uncommon. There are well developed secondary and special schools, and universities at Lund and Upsala, besides private faculties. The Lutheran is the national creed, but all others, with the exception of Mormonism, are tolerated.

PRODUCTION. About 49 per cent of the people are engaged in agricultural pursuits, mostly in the southern portion. Of the total area, 21,623,608 hectares were under forest in 1911, 3,654,925 under cultivated plants, 1,305,628 in natural pasture, 45,719 in gardens, and 14,405,480 hectares uncultivated lands. In 1906 the farms under cultivation numbered 255,361, of which 81,900 were of 2 hectares (1 hectare = 2.471 acres) and under; 224,599 of from 2 to 20; 33,548 of from 20 to 100; and 3239 of more than 100. The public forests are mostly owned by the crown. In the table below are given area devoted to principal crops in 1912–13 and 1913–14, production for both years, and yield per hectare in 1912–13.

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*ha.*
Wheat	104,900	104,900	2,539,180	2,092,527	24.2
Rye	400,100	400,100	5,655,880	5,148,587	14.1
Barley	176,800	176,800	3,682,110	3,210,156	20.8
Oats	789,900	789,900	14,488,290	10,498,674	18.3
Potatoes	152,800	152,800	20,511,810	15,687,566	134.2
S. beets	28,006	28,006	8,451,700	9,528,847	301.8

	Sq. kilometers			*Population*	
	Land	*Water*	*Total*	*1910*	*1912*
Stockholm *	107.65	5.78	113.43	342,323	350,955
Stockholm	7,414.07	349.07	7,763.14	229.181	242,792
Upsala	5,120.87	192.44	5,313.31	128,171	130,529
Södermanland	6,237.55	573.51	6,811.06	178,568	180,921
Ostergötland	9,968.39	1,077.56	11,045.95	294,179	296,956
Jönköping	10,616.88	905.14	11,522.02	214,454	216,261
Kronoberg	8,906.66	1,003.21	9,909.87	157,965	157,608
Kalmar	10,961.97	581.04	11,543.01	228,129	228,878
Gottland	3,117.94	41.84	3,159.78	55,217	55,488
Blekinge	2,895.71	119.02	3,014.73	149,859	150,055
Kristianstad	6,243.80	213.25	6,456.05	228,807	231,810
Malmöhus	4,726.20	106.55	4,832.75	457,214	465,021
Halland	4,771.34	149.92	4,921.26	147,224	146,902
Göteborg and Bohus	4,895.59	151.57	5,047.16	381,270	390,608
Alvsborg	11,677.89	1,050.76	12,728.65	287,692	290,898
Skaraborg	8,074.96	405.41	8,480.37	241,284	241,024
Värmland	17,548.67	1,774.85	19,323.52	260,185	260,825
Orebro	8,343.23	791.26	9,134.49	207,021	209,486
Västmanland	6,397.84	309.78	6,707.62	155,920	158,850
Kopparberg	28,158.68	1,711.64	29,870.32	233,878	237,438
Gävleborg	18,197.82	1,530.18	19,728.00	258,792	256,566
Västernorrland	24,127.97	1,404.54	25,532.51	250,512	255,704
Jämtland	47,611.96	3,943.54	51,555.50	118,115	120,284
Västerbotten	55,570.87	3,363.47	58,934.34	161,866	164,202
Norrbotten	98,660.09	6,860.20	105,520.29	161,182	166,641
Lakes:					
Vänern	....	5,568.22	....	......	......
Vättern	....	1,898.52	9,122.34	......	......
Mälaren	....	1,162.55		......	......
Hjälmaren	....	493.05	....	......	......
Total	410,353.60	37,737.87	448,091.47	5,522,403	5,604,192

* City.

Of the total population in 1912, 2,740,737 were males and 2,863,455 were females. The rural population totaled 4,169,960, and the urban 1,434,232. Some of the principal cities, with their population at the end of 1912 were: Stockholm 350,955 inhabitants; Göteborg, 173,875; Malmö, 92,338; Norrköping, 46,674; Gäyle, 35,838; Hälsingborg, 33,863; Orebro, 32,075; Eskilstuna, 28,729. Marriages 1912, 32,993; living births, 132,150; deaths 79,251 (preliminary figures).

The figures for 1913–14 are subject to revision.

At the end of December, 1911, there were in the country 588,485 horses (493,322 over 3 years old, 95,163 under 3 years), 2,689,609 cattle (1,837,035 cows, 144,277 steers, 52,467 bulls, 655,830 calves and young stock), 945,709 sheep, 66,136 goats, 951,164 swine; in 1900 the horses numbered 533,050, cattle 2,583,555, sheep 1,261,493, goats 79,826, swine 805,805. Dairying is an important industry. In 1910 the creameries numbered 1416, receiving milk from 80,179 farmers, milk received 1,149,219,973 kilograms; fresh milk sold, 136,969,685 kilograms; butter 32,938,444 kilograms; cheese 10,136,059 kilograms.

The total public forest area was 8,958,448 hectares; total revenue from State forests, 12,744,871 kronor; net revenue, 7,595,749 kronor.

The mineral wealth is considerable. The production of iron ore for the year 1912 was 6,700,565 tons. Output of pig iron 1912, 699,816 tons; in 1913, 735,000. Bar iron 1912, 470,352 tons; 1913, 467,000. Exports in 1912 of iron ore, 5,520,653 tons; pig iron, 204,850; bar iron, 42,980. Output of silver and lead ore in 1912, 2877 tons; copper ore, 3059 tons; zinc ore, 50,036 tons; manganese ore, 5101 tons; sulphur pyrites, 31,835 tons. Gold output 1912, 30,559 kilograms; silver, 961.7; lead, 1,072,889; copper, 3,957,157; zinc, 3,228,231; coal produced, 360,291 tons.

The saw- and planing-mills numbered 1232 in 1910, and the value of their output was 182,456,197 kronor; joineries and furniture factories 519, output valued at 27,058,674 kronor; pulp mills, 166, 95,670,178 kronor; paper and pasteboard mills, 70, 53,885,555 kronor; flour mills, 1384, 106,392,847 kronor; iron and steel works, 658, 94,153,755 kronor; machinery factories, 459, 82,333,521 kronor; sugar mills, 21, 40,289,831 kronor; sugar refineries, 10, 65,099,661 kronor.

COMMERCE. In the table below are shown imports and exports of merchandise, and precious metals for 1911 and 1912, with comparative figures for 1900.

	1910	*1911*	*1912*
Imps, mdse.	525,556,596	690,449,526	782,897,586
Imps. p. m.....	9,878,514	6,167,407	10,816,881
Total imps....	584,985,110	696,616,988	798,718,967
Exps. mdse. ...	891,811,969	668,585,974	760,469,404
Exps. p. m.	21,998	89,544	156,350
Total exps. ...	891,888,962	668,575,518	760,625,754

Imports and exports by classes are given below for the year 1912, with values in kronor:

	Imports	*Exports*
Live animals	21,998,806	16,420,768
Animal foodstuffs	26,282,907	88,405,081
Cereals and their products..	75,486,684	4,999,764
Colonial products	60,805,828	758,018
Fruits, etc.	16,819,425	1,104,406
Spirits and other liquors...	9,508,971	499,291
Textiles	57,025,020	2,296,672
Yarns and cordage	18,756,171	8,048,229
Textile manufactures	53,996,680	4,556,221
Animal products	86,038,215	21,916,689
Leather, etc., mfrs.	5,008,148	465,816
Gums, oils, etc.	68,642,827	6,612,412
Soaps, perfumes, etc.	6,672,491	8,866,689
Timber	12,748,181	16,898,188
Wooden mfrs.	5,841,215	174,786,980
Lumber	2,071,888	126,816,270
Dyes, etc.	6,572,258	781,464
Vegetable products	41,858,472	1,818,786
Pulp, paper, etc.	4,604,847	184,807,927
Miscellaneous mfrs.	8,794,122	788,456
Raw minerals	188,840,644	81,080,549
Worked minerals	7,885,824	85,198,889
Metals, raw and partly mfrd.	88,581,989	47,880,186
Worked metals	54,809,982	57,480,888
Machinery, ships, etc.	42,498,585	57,161,246
Various	9,651,825	8,118,204
Total	782,897,586	760,469,404

The principal countries of origin and destination follow, with the value of their trade in thousands of kronor: Germany, 275,423 imports, 170,999 exports; United Kingdom, 192,210 and 222,795; United States, 60,458 and 32,149; Denmark, 53,820 and 67,508; Russia, 33,395 and 27,030; France, 33,298 and 53,228; Norway, 25,357 and 42,979; Netherlands, 19,816 and 18,949; Brazil, 15,553 and 2485; Argentina, 15,504 and 9405; British India, 6993 and 5955; Finland, 18,872 and 14,963.

The merchant marine Dec. 31, 1911, included 1539 sail, of 154,968 tons, and 1219 steamers, of 610,100 tons and 481,805 horsepower; a total of 2758 vessels, of 765,068 tons. There were entered at the ports in the 1911 trade, 36,241 vessels, of 11,634,258 tons; cleared, 36,318, of 11,756,389 tons.

COMMUNICATIONS. During 1914 the Swedish government was approached by Russia in reference to connecting the railway systems of the two nations by a bridge at Karungi on the river Torneå, which forms the frontier between the two countries, the eastern part of the city, which is on both sides, belonging to Finland. During the year there was under construction a railway between the city of Torneå and Finnish Karungi opposite the terminus of the Swedish railway system. The matter was to be placed before the Swedish Riksdag.

The war lent increased interest to any scheme for traffic across Sweden to Russia, as the Baltic was practically closed. New regular lines were started between Stockholm, Gefle, and Finland, while Bjorneaborg was anxious to obtain a connection with Gundswall. At the end of the year the railroad circling the Gulf of Bothnia on the Baltic Sea was virtually completed, but a small gap over which passengers had to drive, remained in the line from Stockholm to Petrograd. The Russian line extended to a point opposite the Swedish station at Karungi, where passengers left the train and crossed a half mile over the frozen river Torneå. This was to take the place of the previous journey between the towns of Tornea and Haparanda, a distance of 10 miles, and at the end of the year 500 or 800 passengers were making the trip daily, and heavy freight was being moved, as the steamship travel between the Swedish coast and Russian ports was becoming uncertain.

The section from Kiruna to Riksgraensen of the line from Lulea, Sweden, on the Gulf of Bothnia to Narvik, Norway, on the Atlantic Ocean, 293 miles in length was electrified, and the work practically completed during the year 1914. This line runs through an uninhabited country, where temperatures of from 25 to 35 degrees below zero are common in January and February, and to increase the transportation of iron ore of which 3,000,000 tons were hauled in 1913 by steam, it was determined to electrify the line, and use heavier trains by securing an average increase of about 25 per cent speed. The power is transmitted at 80,000 volts to four special stations, where it is stepped down to 15,000 volts for the trolley line.

The State railway lines in operation at the end of 1912 had a total length of 4683 kilometers; private lines, 9589 kilometers—a total of 14,272 kilometers. The State telegraph lines had a total length of 10,419 kilometers; wires, 32,347. Railway telegraph lines, 10,564 kilometers; wires, 28,041. Wireless stations numbered 5, and 29 on board vessels. The urban telephone systems had 151,843 kilometers of wires, and the interurban 139,108. Post offices, 3790.

ARMY. Events in Europe aroused general interest in the government scheme for strengthening the home defenses of the kingdom, and as a result, on Sept. 12, 1914, the Riksdag passed a decree changing the requirements of compulsory service, making the time of liability for compulsory service from 20 to 42 years of age, so as to furnish the first calling out of recruits with three additional annual classes, with the result that the first call would altogether comprise 11 annual classes, and thereby when called out they would insure a reserve battalion for each infantry regiment. This legislation provided for the extension of the training time of the infantry from the former period of 240 days to 340 in the line, which was divided into a first training period of 250 days and an extra training period of 30 days during each of the second, third, and fourth years. Conscripts, trained as reserve noncommissioned officers in order to complete the requirements of the mobilization of the infantry, must do 400 days' service. The period of service and general qualifications for the cavalry, field artillery, and troops of engineers were not changed. These men serve one year in the line, as also do those in the position and fortification artillery. Provision was made for training students and other young men, and the reserve was to be organized no longer on a paper basis, but regularly drilled. The artillery and technical troops were to be increased, each to be mobilized for a period of 15 days during the 9th and 10th service years, while the other special arms were to be drilled 25 days during the 5th and 6th years, and the territorial troops were to get a training of 5 days, so that they might be called upon by the king as a protection to the mobilization of conscripts, or sent to points especially threatened. Increased pay was to be awarded for service. Another innovation was the democratization of the army, making it easier for noncommissioned officers to get commissions, and the number of reserve officers was to be increased by 50 per cent. The new scheme of organization applied most especially to the strengthening of the infantry. Regiments were to be provided each with a company having 6 machine guns, and to be supplied with a battalion of the line of the conscripts first called, and 2 reserve battalions from the cavalry brought out at the second call. In connection with these reserve organizations the permanent cadres of officers were to be increased. One squadron from every large cavalry regiment was to be ordered to Noorland, where they were to form a cavalry corps, and every cavalry regiment was to be provided with a machine gun section having 2 machine guns. The organization of the artillery was to be changed, and new engineering corps were to be founded as well as the old.

Two extra generals were to be added to the army and 12 chiefs of infantry regiments during times of peace were to be chiefs of infantry brigades with extra pay. The General Staff was to be increased by about 1/15. The entire cost of the land defense after the army had been fully organized was to be increased by over 9,000,000 kronor to 64,500,000 kronor. The new army organization was to be carried through within 10 years from Jan. 1, 1914.

NAVY. The effective fleet in 1913 included 12 coast-defense vessels, of 42,600 tons; 1 armored cruiser, 4100; 10 protected monitors, 7200; 5 torpedo gunboats, 4000; 4 gunboats, 1850; 8 destroyers, 3450; 31 first-class torpedo boats, 3100; 22 second-class torpedo boats, 1300; besides submarines, school ships, dispatch boats, etc. Building, 1 coast defense vessel of 6800 tons displacement and a speed of 22.5 knots, 5 torpedo boats, and several submarines. Personnel, about 7500 of all ranks.

FINANCE. The unit of value is the krona, worth 26.8 cents. The 1914 budget balanced at 273,739,700 kronor; 1913 budget, 263,027,200; 1912 budget, 257,196,700. Actual receipts in 1912 amounted to 273,067,808; actual expenditure, 307,729,458. The public debt stood Jan. 1, 1913, at 602,199,692 kronor.

GOVERNMENT. The King is the executive acting through an executive council. The legislative body is a Riksdag, composed of an upper chamber of 150 members elected for six years, and a lower chamber of 230 members elected for three years. Reigning sovereign in 1914, Gustaf V, born June 16, 1858. He married Princess Victoria of Baden, and succeeded to the throne Dec. 8, 1907. Heir-apparent, Prince Gustaf Adolf, born Nov. 11, 1882. He married Princess Margaret of Great Britain and Ireland June 15, 1905. The ministry is given under *History*.

HISTORY

DEFENSE QUESTION. The Riksdag was opened on January 16 with a Speech from the Throne foreshadowing bills to strengthen the national defense, to grant the parliamentary franchise to women, and to regulate the liquor traffic more effectively. State subventions were proposed for the extension of State railways, for the provision of a floating dock at Gothenburg, and for the improvement of marine communications with Great Britain. A special tax was proposed for the reorganization of the defense forces. The movement in favor of militarism, indeed, soon overshadowed all else. A Parliamentary Committee, after investigating the whole question, urged the creation of a larger navy, the adoption of a longer term of service in the army, and the imposition of a special defense tax. On January 26, Admiral Lindman, on behalf of the Opposition, proposed a programme which called for the construction of three battleships, two destroyers, and three submarines, at a cost of about 7,500,000 kronor in addition to the sums already appropriated for naval purposes. On February 6, a monster-delegation of peasants petitioned the King in favor of strengthening the defenses immediately, and obtained the King's assurance that he was heartily in sympathy with their desires. Several thousand trade-unionists made a counter-demonstration, declaring their opposition to militarism; they were informed by the Premier that a certain measure of warlike preparation was absolutely indispensable.

THE CABINET CRISIS. It had already been observed that whereas the King in his speech to the peasants had favored the immediate lengthening of the term of military service, the Premier, speaking to the trade-unionists, deferred the army question until new elections should have expressed the country's verdict. The difference of opinion speedily developed into a serious antagonism between monarch and premier. The Premier insisted that the King had no right to express in public convictions which were notoriously at variance with the intention of the ministry in regard to the defense question. The King, on the other hand, maintained that he had the right to speak out freely in behalf of what he considered to be vitally necessary for the nation; he had only expressed his personal views, and the cabinet had not yet formally advised him of its intentions. The outcome of the controversy was the resignation of Karl Staaff and his cabinet, February 10. Cheering crowds and a student procession manifested approval of the King's firm stand. In the formation of a new cabinet, the King's first choice, the Liberal Senator Baron Louis de Geer, was unsuccessful, as no Liberals would coöperate; the King then called upon Kunst Hammerskjöld, who formed a "National Defense Ministry," February 17, as follows: Premier and Minister of War, K. Hjalmar L. de Hammerskjöld; foreign affairs, Dr. K. A. Wallenberg; justice, B. F. E. Hasselrot; interior, O. F. de Sydow; finance, A. F. Vennersten; marine, D. Bröstrom; worship, K. G. Westman; agriculture, J. (Baron) Beck-Friis; military expert, Col. B. B. E. Mörcke; without portfolio, S. F. Stenberg and S. N. Linnér. Imitating the French parliamentary practice, the new ministry inaugurated its career by reading a declaration of policy before the houses of Parliament. The new ministry declared its mission to be the preparation of defense proposals which would be submitted to the people in a general election as soon as possible; so far as it lay in the cabinet's power, party lines would be disregarded. Naturally the Socialists and the Radicals in the lower house vehemently attacked the ministerial declaration. In accordance with its promise, the government dissolved the Riksdag on March 5, in order to obtain a national mandate for the following programme: (1) The length of service in the infantry was to be extended to 340 days, which would be divided into one long period of 250 days, and three short periods of 30 days each. (2) The fleet was to be increased by 2 new divisions of 4 ships each, for coast defense, with heavy guns and high speed; 16 destroyers; 2 divisions of submarines; and 2 divisions of torpedo boats. (3) The cost was to be defrayed without having recourse to loans, by levying new proportional taxation on large fortunes and incomes.

Result of the Elections. The elections which took place from March 27 to April 7 were disastrous for the Liberals. The Socialists, who frankly advocated the reduction of the term of military service to six months, increased their representation from 64 to 73 seats; the Conservative or National Defense party, avowedly militaristic, gained 22 seats; but the Liberals by following a middle course lost 31 seats. As a majority in the new chamber could not be obtained unless the 71 Liberals formed a *bloc* with the 73 Socialists, or unless the 86 Conservatives obtained support from the Liberals, the Socialist leader, M. Branting, offered to coöperate with the Liberals if they would work for the reduction of armaments. The Liberals refused, and the National Defense ministry remained in power.

King Gustaf opened the Riksdag in person, May 19, in spite of his recent illness. In the Speech from the Throne he urged the adoption of the defense measures, along with the tax on larger incomes and fortunes. The following day Gustaf repaired to Carlsbad, leaving the Crown Prince as Regent. The Defense Bill, introduced into the Riksdag on May 23, embodied the proposals already outlined for the construction of 8 battleships, 16 destroyers, and sundry other craft. The triumph of the King's policy was complete: he had overthrown a ministry which possessed the confidence of the Riksdag; he had set up a new cabinet; he had been upheld by the electorate; and the strengthening of Sweden's defenses seemed assured. New parliamentary elections, held in September, left the Conservative party practically stationary, while, at the expense of the Liberals, the Socialists increased their representation from 73 to 87. The Socialists expected in the near future to concert measures with the Liberals for the overthrow of the Conservative ministry and for the establishment of a Socialist-Liberal coalition cabinet. See Socialism, *Sweden*.

Scandinavian Neutrality. When the War of the Nations began early in August, Sweden promptly declared her neutrality, and began mobilization, August 4. There were stories of an alliance of Sweden and Norway for mutual aid in the maintenance of neutrality. On December 18, a conference was held at Malmoe, Sweden, of the three Scandinavian monarchs, Gustaf of Sweden, Haakon of Norway, and Christian of Denmark. More important, probably, than the courtesies interchanged by the kings, were the consultations of the foreign ministers who had accompanied their sovereigns. Just what the upshot of the Malmoe Conference was, it is at present impossible to state with confidence; in all probability the three Scandinavian governments discussed measures whereby they might better defend their neutrality and protect their economic interests during the war; but as regards the international bearing of the Scandinavian agreement, whether favorable or hostile to Germany, a divergence of opinion existed. See also, International Arbitration and Peace, *Bryan-Wilson Treaties*.

SWEDISH LITERATURE. See Scandinavian Literature.

SWIMMING. The swimming records of 1914 prove conclusively that the United States has outstripped the rest of the world in this branch of sport. The most striking figure of the year was undoubtedly Harry Hebner of the Illinois A. C. In free style swimming he established the new record of 1:31⅕ for 150 yards (7 turns), and lowered the time for 220 yards (10 turns) to 2:21, and of the 440 yards (21 turns) to 5:22⅖. Hebner also bettered his own world's marks for the regular 150-yard course in a 20-yard pool (1:59⅗), and in a 75-yard pool (1:55⅘).

Hebner, with his clubmates—William Vosburgh, Perry McGillivray, and Arthur Raithel—swam 400 yards in 100-yard relays in 3:52⅘ in a 75-foot pool, and in 3:57⅕ over a 100-yard fresh water course. Other American swimmers to distinguish themselves were Duke Kahanamoku of the Los Angeles A. C., Ludy Langer of the same club, Barrett Small of the Olympic Club, Bud Goodwin of the New York A. C., and Herman Laubis of the Missouri A. C. Of the long distance swims of the year, the most noteworthy was the *Tribune* Marathon from the

Battery, New York, to Sandy Hook. This race was won by George Meehan of Boston, who swam the 22 miles in 7 hours, 18 minutes, lowering the record by one hour.

Yale for the second successive year won the intercollegiate team championship. Paul Roberts of Yale won the 50-yard and 100-yard races, and Arthur McAleenan of Yale captured the fancy diving event for the second consecutive time. The conference college title was won by the University of Illinois.

SWITZERLAND. A Federal republic of central Europe. Capital, Berne.

POPULATION. According to the census of Dec. 31, 1910, the *de jure* population numbered 3,753,293; *de facto* population, 3,765,123. The area of the 25 cantons and demicantons, with their population as calculated by the Federal Statistical Bureau for the middle of the year 1912, are shown in the table below:

	Sq. km.	*Pop.*
Zürich	1,724.76	524,590
Berne	6,844.50	654,520
Lucerne	1,500.80	170,680
Uri	1,076.00	22,490
Schwyz	908.26	58,910
Obwalden	474.80	17,460
Nidwalden	290.50	13,900
Glarus	691.20	33,470
Zug	239.20	28,640
Fribourg	1,674.60	141,520
Solothurn	791.51	119,620
Basel-Stadt	35.76	139,940
Basel-L'dt.	427.47	77,740
Schaffhausen	294.22	46,320
Appenzell A.-Rh.	242.49	58,400
Appenzell I.-Rh.	172.88	14,740
St.-Gall	2,019.00	310,400
Graubünden	7,132.80	118,790
Aargau	1,404.10	234,450
Thurgau	1,011.60	138,350
Tessin	2,800.90	158,950
Vaud	3,252.00	324,300
Valais	5,224.49	129,880
Neuchâtel	807.80	134,100
Geneva	282.35	158,610
Total	41,323.99	3,831,220

The 1910 census returned 2,108,642 Protestants, and 1,590,832 Roman Catholics. Those speaking German as their native tongue numbered 2,599,194, French 796,220, Italian 301,323, Romansh 39,912, other languages 28,172. The marriages in 1912 numbered 27,843, as compared with 27,809 in 1911; divorces, 1514 (1623 in 1911); births, 95,171 (94,185), of which illegitimate 4592 (4372); stillbirths, 2975 (2865); deaths, 54,102 (59,619). The emigrants in 1913 numbered 6191 (5871 in 1912); of these 4367 (4195 in 1911) went to the United States, 874 to Argentina, 257 to Brazil, etc. The greatest number, 1099, came from Berne. The communal population of Zürich as estimated in the middle of 1913 was 200,600; Basel, 137,500; Geneva, 135,000; Berne, 90,800; St.-Gall, 80,000; Lausanne, 69,400; Lucerne, 41,500; Chaux-de-Fonds, 38,600; Winterthur, 25,800; Neuchâtel, 24,100; Bienne, 24,000; Fribourg, 21,200; Montreux, 19,700; Schaffhausen, 18,600; Vevey, 14,000.

EDUCATION. Primary instruction is free, and in the Protestant cantons attendance is enforced. There is no direct Federal control of education, authority being vested in the cantons and communes. Secondary schools are amply provided, and well attended. There are excellent special schools, and seven universities.

PRODUCTION. In the valleys agriculture is carried on. Of the total area, 32,029.38 square kilometers are classed as productive; of these, 22,653.89 square kilometers are under agricultural and industrial plants, 228.98 under vine, and 9146.51 under forest. The area under main crops, and the yield for two years, with yield per hectare in 1912–13, are shown in the table below:

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*ha.*
Wheat	42,365	41,600	955,000	928,000	22.5
Rye	24,254	24,300	445,000	454,000	18.3
Barley	5,182	6,100	98,000	116,000	18.9
Oats	32,644	33,700	739,000	757,000	22.6
Corn	1,300	1,100	30,000	29,000	23.1
Vines *	23,000	23,000	264,000	500,000	189.4
Tobacco	320	250	6,020	......	18.8
Potatoes	55,400	55,400	8,500,000	7,200,000	153.4
S. beets	792	750	316,800	......	400.0

* Yield in hectoliters of wine.

The figures for 1912–13 are final, those for 1913–14 are subject to revision.

The final results of the Federal live stock census of April 21, 1911, are compared with those of the census of April 20, 1906, as follows: 144,128 horses (135,372 in 1906), of which 17,498 (17,344) were colts under four years, 157 (156) were stallions, 6424 (5496) were brood mares, and 120,049 (112,376) were general-purpose stock. Cattle, 1,443,483 (1,498,144), of which 796,909 (785,950) were cows, 94,069 (98,358) were heifers over two years, and 164,355 (186,022) under two years and over one, 7345 (7167) bulls over two years, and 18,862 (19,549) under two and over one year, 23,454 (33,897) oxen over two years, and 17,409 (28,144) under two and over one; 188,541 (186,307) young breeding stock, 38,708 (41,392) young beef stock; 93,831 (112,358) calves under one year; goats, 341,296 (362,117); swine, 570,226 (548,970); bee hives, 225,030 (242,544 in 1901). There were placed for hatching in 1913, 335 hectograms of silkworm eggs, producing 30,798 kilograms of cocoons.

There were, in 1905, 242,543 industrial and commercial establishments, and 71,413 home industrial enterprises. Silks, cottons, linen, lace, thread, woolens, leather, gloves, pottery, watches and clocks, and tobacco and snuff are representative manufactures. There were 137 breweries in operation in 1913, with an output of 2,969,200 hectoliters of beer. Total output of cement and allied products in 1913, 785,535 metric tons. The manufacture of butter, cheese, condensed milk, and milk chocolate constitutes an important source of the country's wealth, and great quantities are exported.

COMMERCE. The special trade for three years is given in francs in the table below:

	1911	*1912*	*1913*
Imps. mdse.	1,802,358,995	1,979,100,604	1,919,816,280
Imps. pr. mets.	41,484,268	60,329,609	58,054,945
Total imps.	1,843,843,263	2,039,430,213	1,977,871,225
Exps. mdse.	1,257,309,404	1,357,616,671	1,376,399,116
Exps. pr. mets.	31,528,813	33,118,057	34,409,773
Total exps.	1,288,838,217	1,390,734,728	1,410,808,889

Certain details of the special trade for two comparative years will be found in the table which follows, values in thousands of francs:

Mdse.	*Imports* 1912	1913	*Exports* 1912	1913
Cereals	286,460	248,103	6,869	6,524
Fruits and vegetables	42,012	58,110	6,492	1,285
Colonial produce	118,721	111,468	55,657	58,540
Animal food substances	115,675	98,844	118,717	121,849
Tobacco	16,100	15,628	4,207	4,055
Beverages	58,238	61,975	869	805
Animals, living	72,661	60,406	15,887	11,222
Hides and skins	56,804	55,417	39,848	47,271
Timber	50,088	42,799	7,488	8,868
Cotton goods	128,709	126,082	270,906	260,936
Linen, hemp, etc.	24,048	22,725	8,654	4,665
Silk goods	177,477	178,254	278,238	271,018
Woolen goods	77,948	74,084	24,591	28,994
Clothing, ready made	55,885	57,088	20,725	22,766
Mineral substances	118,028	121,801	18,905	14,964
Iron work	114,960	104,187	31,828	32,802
Copper work	88,544	85,827	10,205	10,898
Gold & silver bullion	99,568	80,012	20,631	20,552
Machinery	54,465	49,664	92,090	98,715
Clocks	2,208	2,630	160,608	169,210
Chemicals	45,844	47,466	19,174	20,040
Grease, oils, etc.	31,728	28,775	2,427	2,089

Countries of origin and destination are presented below, with the value of their trade (merchandise) in thousands of francs:

	Imps.	*Exps.*
Germany	647,161	307,029
France	376,334	187,984
Italy	192,628	90,608
Austria-Hungary	122,866	88,662
United Kingdom	116,765	280,005
Netherlands	21,647	11,870
Belgium	38,988	27,620
Spain	30,408	27,280
Rumania	48,217	9,706
Russia	80,226	47,808
Other European	34,017	37,282
Canada	18,900	31,774
United States	88,761	185,672
Brazil	20,686	22,060
Argentina	35,979	29,827
Colombia	8,949	1,814
Other American	12,085	28,996
Asia	51,556	51,972
Africa	38,775	17,396
Australia, etc.	14,708	18,848
Unindicated		8,445

COMMUNICATIONS. On the first of January, 1912, there were in operation 4917.4 kilometers of railway. The national railways comprehend about one-third of all lines, but their operation has not proved an unqualified success. The rolling stock in 1912 included 1594 locomotives, 4879 passenger cars, and 18,344 freight cars. Passengers carried during 1912, 2,523,874,190; merchandise transported, 1,437,481,565 metric tons. Receipts from operation during 1912, 248,844,972 francs; expenses, 165,038,834 francs —not including extraordinary expenditures, which are not charged in this account. Cost of construction to end of 1912, 1,923,255,656 francs.

During the early part of 1914 Switzerland showed the greatest activity in railway construction of any of the countries in Europe. On the new route between Nice, Cannes, and Turin, progress was being made, and a number of tunnels had already been completed, while others were being bored. This line, which would require some three years more for completion, would reduce the distance between Nice and Turin by 47 miles. The new and direct route via Delle to Lötschberg and Simplon to Italy, piercing the Jura Range by the Grenchenberg single track tunnel, 5⅜ miles in length, was completed during the year, and makes possible a direct route to Italy. An important mountain line, the Furka railway between Brig and Disentis, was opened in June, and is 60 miles in length, part of it being on the rack system with gradients of 1 in 14, and 1 in 19 The 5-mile Hauenstein Pass tunnel, connecting Tecknau and Olten, was pierced during the year, but completion of the Mont d'Or was delayed by the inrush of water.

The effect of the war was seriously felt by the various railway systems of Switzerland, and the Federal railways were forced to economize in every possible way. By the end of September there was little international traffic, and the ordinary traffic fell to about one-fourth of its normal amount, while tourist traffic was even more seriously affected, and great losses were suffered by the freight traffic. Work on the second Simplon tunnel was stopped in August, and excavations on the north side ceased on August 4, the masoning over on August 22, while on the south side the work was very considerably reduced as early as August 3, and most of the workmen dismissed. By October but a few employees were retained, merely to insure the safety of the completed and incompleted tunnels. The private railways in Switzerland were quite as seriously affected as the Federal lines, and the traffic on the mountain railways in the neighborhood of Lucerne fell to practically nothing, while in August the Stanserhorn and Rigi-Scheidegg ceased running. The Swiss private railways, which before the war paid about 4 per cent dividend, on an average paid much less during 1914 than in previous years, and the Federal railways suffered so much in August and September by receipts falling off almost 50 per cent, that a winter timetable was put in force with a greatly reduced schedule, designed on account of the small number of tourists expected in the season of 1914–15. The board of directors of the Federal railways resolved to reduce expenditures on the new line to the lowest possible amount, which was less than half of what was originally contemplated in the fall of 1914. The number of passes was to be restricted, the railway uniforms were to be made to wear longer, and various other economies were to be practiced. The Federal railway estimates prepared for 1915 anticipated a deficit for nearly $6,000,000, whereas in 1913 the balance of receipts over expenditures was about $345,000, and there should have been a surplus for 1914.

Plans had been prepared for what would be the longest Alpine railway, running from Brig, near the Italian border, to Disentis, connecting the former place with the Federal Swiss railways. This line was to begin at the end of the Simplon tunnel at 2200 feet above sea-level, and pass directly over the St. Gothard tunnel as a surface road, at 4700 feet above sea-level, running at one point 7100 feet, to connect Brig with St. Moritz, through an existing branch line, thus affording a tourist route of surpassing beauty, through the region of the upper Rhone, and the headwaters of the Rhine.

There were in 1911, 442.23 kilometers of tramways in operation, and 423 of funicular railways. State telegraph lines, 3575 kilometers; wires, 26,306; stations, 2291. There were in operation 21,336 kilometers of telephone lines, with 360,425 of wires. Post offices, 1957. Postal receipts for the year 1912, 64,367,567 francs; expenditure, 61,853,679. Telegraph and telephone receipts, 287,037,720; expenses, 283,792,225. Total cost of line construction to end of 1912, 70,842,003 (5,124,384 in 1912) francs.

FINANCE. The unit of value is the franc, par value 19.295 cents. Actual revenue and expenditure for three years are given below in francs:

	1910	*1911*	*1912*
Revenue	166,866,721	172,209,861	102,888,649
Expenditure	161,880,520	172,461,807	100,988,098

The figures for 1911 as given above are the results of the old system of computation; by decision of the Federal Assembly only the net results of administration of the department of posts and telegraphs are to be included, dating from 1911, in the account. According to this new basis of calculating, the revenue for 1911 is 98,044,100 francs, and the expenditure 98,296,046. The details of the budget for 1914 are presented below in thousands of francs:

Revenue	*1000 fr.*	*Expenditure*	*1000 fr.*
Customs, etc.	85,844	Military	45,758
Investments	4,078	Interior	16,640
Military	3,757	Commerce, etc.	16,582
Real estate	2,088	Finance, etc.	9,677
Posts & rys.	1,099	Debt	9,814
Justice, etc.	1,094	Justice, etc.	2,358
Commerce, etc.	1,067	Administration	1,606
Interior	189	Political	1,188
Administration	119	Posts & rys.	572
Political	25	Miscellaneous	1,756
Miscellaneous	11		
Total	98,820		105,440

The debt stood Jan. 1, 1912, at 255,130,031 francs.

Army. While the neutrality of Switzerland was guaranteed by the Treaty of Vienna of 1815, as a condition indispensable to the peace of Europe, and the general interests of the neighboring countries, nevertheless the inhabitants in 1914 feared some violation of that neutrality, and accordingly the army was mobilized and maintained on the borders. The Swiss army is a national militia in which service is compulsory for each citizen, although the time of service actually required is not of long duration.

Ordinarily a citizen is liable for 13 years' service in the Auszug or Elite, 8 years in the Landwehr, and the remaining years up to the 48th in the Landsturm. This permits of recruit training in the first year of 92 days for the cavalry, 77 days for the artillery, 67 days for the infantry, with repetition courses of 13 days in each of the second to the eighth years. In this way the field army can be assembled over 200,000 strong, 140,000 men being an average strength of the Auszug, and the rest being derived from the Landwehr. The Landsturm consists of about 300,000 men, and is intended for the defense of communications, railways, and interior lines generally. The Swiss military system maintains a permanent instructional staff and the organization is one of cadres that are filled as required.

Government. The executive authority is vested in a Federal council of seven members, elected for three years by the National Assembly, and presided over by the President of the confederation, who, with the Vice-President, is elected for one year by the Assembly from among the members of the council. The legislative power resides in a national assembly made up of two houses. The President for 1914 was Col. Dr. Arthur Hoffmann, born 1857; Vice-President, Giuseppe Motta.

History. The Sickness Insurance Act, recently adopted by referendum, came into force on January 1. The cantonal governments were empowered to make sickness insurance compulsory instead of voluntary. Compulsory accident insurance was to come into operation at a later date. The budget debates were marked by opposition to the army appropriation, which amounted to about $9,000,000 out of the total expenditure of about $20,000,000 for all purposes. The unfavorable financial condition of the country—signalized by three bank failures in the Canton of Tessin—was alleged as an additional reason why the government should hesitate to spend so large a sum for military purposes. The mobilization of the Swiss army, however, as a result of the War of the Nations, necessitated a still more excessive expenditure, to meet which new taxation was imposed and war loans floated. On December 17, the National Assembly elected the Vice-President, Dr. Giuseppe Motta, a Catholic-Conservative, to hold the office of President for the year 1915, and M. Camille Decoppet, an anti-clerical Liberal, to be Vice-President for the same term. See, also, International Arbitration and Peace, *Bryan-Wilson Treaties*.

SYNDICALISM. Syndicalism is that new form of collectivism which advocates the concentration in the hands of the workers of each industry of its own instruments of protection. The name is also applied to the most radical labor movement of the day, which aims at the ending of the present capitalist system. It had its inception in France, and denotes the policy of the Confederation Générale du Travail, and derives its name from the French trade unions, the "syndicats." It has, within the past few years, spread to the United States, South Africa, Austria, New Zealand, Great Britain, and other parts of Europe. It differs from Socialism in that the latter favors political action, while the Syndicalists advocate direct action without parliament or any such body as an intermediary. Further, Socialism appeals to public opinion as a whole, while this more revolutionary movement is distinctly for the working classes. Again, although similar in some respects to trade unions, it aims toward organization of the workers of whole industries rather than those in any class or trade. Direct action, including the general strike and sabotage, are at the basis of this movement. By sabotage is meant a "willful act on the part of the workers intended to reduce the output of production in the industrial field, or to restrict trade and reduce profits in the commercial field in order to secure from their employers better conditions, or to enforce those promised, or maintain those already secured when no other way of redress is open." Destruction or spoiling of materials, the prevention of production, and other similar means are ofttimes resorted to. During 1914 the Syndicalist ideas exerted influence in the South African strike, in the general strike in Italy, noted below, and in the Dublin disturbance. (See Strikes.) In the United States, the I. W. W., which is more active in promulgating these ideas, continued to work among the laborers. See Industrial Workers of the World.

Italian General Strike. In the summer of 1914 what was perhaps the first successful general strike occurred in Italy. It had been determined at the annual conference of the General Confederation of Labor of Italy, in April, that a general strike should be called for not less than 24 hours and not more than 48 whenever a workman was killed by the public authorities as a result of labor agitation. On June 7, the Italian holiday that corresponds to our Fourth of July, an anarchistic demonstration of sympathy for two military convicts was held, and the parade, led by Enrico Malatesta, was fired upon, and three were killed. The next day the executive committee of the Confederation acted according to the decision of the previous conference, calling a general strike. All but the city of Padua obeyed, but most of the government employees remained at their work. For two days industry in Italy was at a standstill. According to the statement of Premier Salandra, more than 100 soldiers and police were wounded, many fatally. While the disturbances were rather widespread, they were most serious in Romagna and the Marches, and for several days a few of the towns in these sections were completely isolated from the outside world. At Anacona Malatesta, there was held a sort of revolutionary tribunal. They conscripted automobiles, and spread the news that the King had left the country. On June 10 the order to return to work was issued, and the next day the greater part of Italy had resumed its normal life. In Romagna and the Marches, also in Milan and Naples, it was not until nearly a week had passed that order was completely restored. The government has since taken steps to prevent a recurrence of any such uprising.

SYPHILIS. See INSANITY, and SALVARASAN.

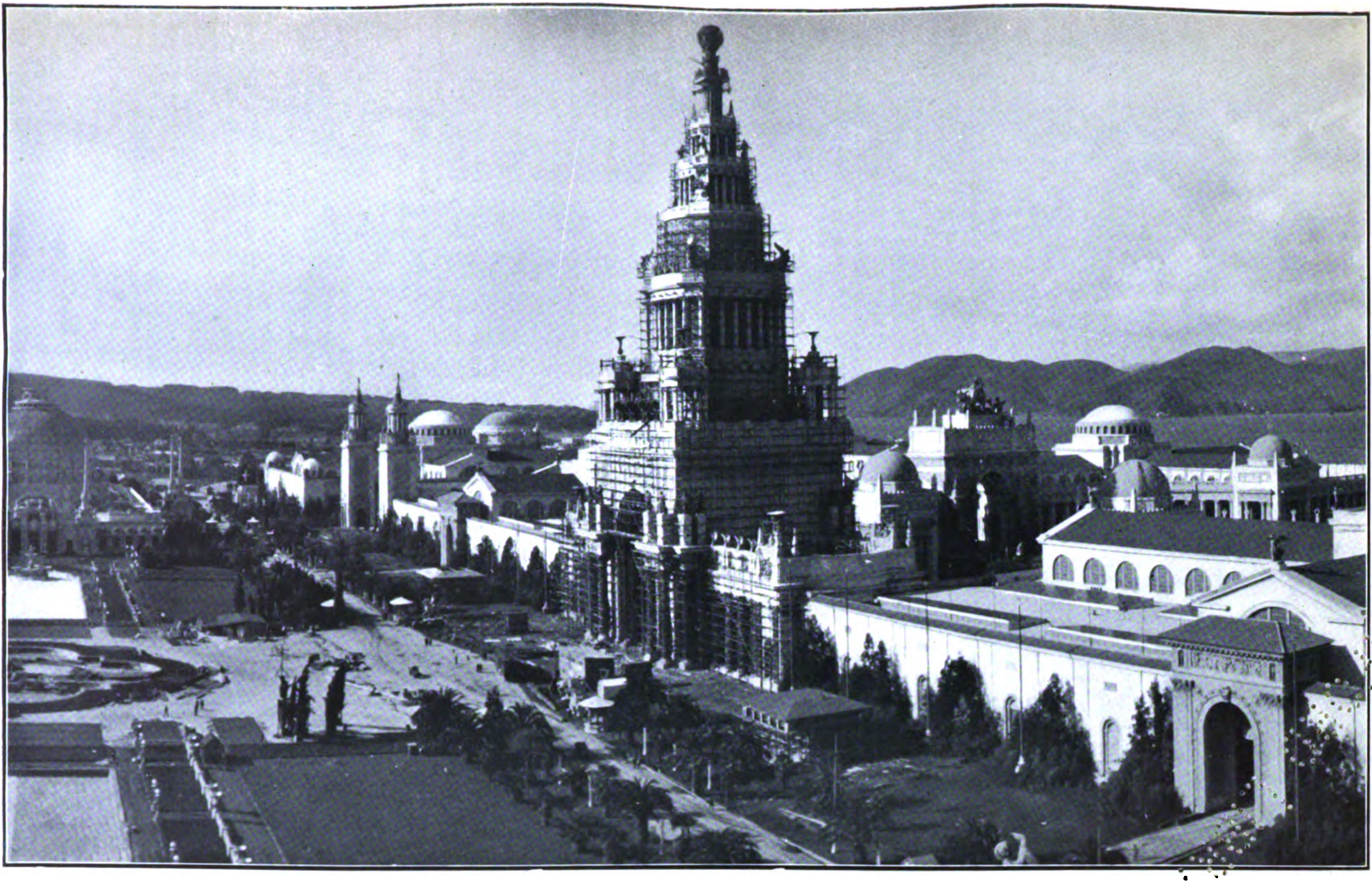
SYRACUSE UNIVERSITY. An institution for higher education at Syracuse, N. Y., founded in 1870. The students enrolled in all departments of the university in the autumn of 1914 were 3933, and the faculty numbered 300. There were no notable changes in the faculty during the year, and no noteworthy benefactions were received. The productive funds amounted to $2,011,648, and the income to about $500,000. The library contained about 92,000 volumes. The president is James R. Day, S.T.D., LL.D.

TAIWAN. See FORMOSA.

TALL BUILDINGS. EQUITABLE BUILDING. During the year work was actively in progress on the Equitable Building, New York City, the largest office building in existence, built on the site of the burned office structure of the Equitable Life Assurance Society. The framework of this building was entirely erected, and the structure was practically closed in at the end of the year, so that it would be in readiness for occupancy in 1915. This building occupies the entire block, Broadway to Nassau Street, between Pine and Cedar Streets, and it differs from other lofty buildings in New York City in that it is not a tower building, but is a normal type of structure, the ground plan being carried up undiminished 36 main stories to the top, with 3 stories below ground. The building is 542 feet high from the Broadway sidewalk to coping, and measures from the level of the normal foundation grillages about 600 feet in height. In structure it is regular in design, with all columns running from the footing to the roof without trusses or other complications of frame, and is composed essentially of columns, beams, and wind bracing. A novel feature is the carrying of the bank vaults in the basement on their own foundations independent of the steel work, thus doing away with the additional weight of the framing, which would have been required to support them. The area occupied by the building is slightly more than an acre, being 159 feet in average width, and 308 feet in average length, affording a total floor space of nearly 40 acres. The weight of the steel framework was 32,000 tons, which made it considerably in excess of anything hitherto achieved in office building construction. An elaborate scheme of wind bracing was worked out, figured on a pressure of 30 pounds per square foot, over the entire surface from sidewalk to coping. The elevators were in 6 banks of 8 each, in the centre of the building, extending, respectively, to the 13th, 21st, 28th, 33d, 36th, and 38th floors. The architecture of the building is simple, and affords ample light for the many offices. On the economic side the erection of the building was thought to afford additional rather than necessary accommodations in a field already congested, especially in view of the existing depression in business.

BOSTON CUSTOMHOUSE. The city of Boston has an ordinance limiting the height of buildings to 125 feet, so, consequently, that city is not as abundantly supplied with skyscrapers as other American places. During the year there was being completed the United States Customhouse, which, being exempt from the city restrictions, was rising to a height of 325 feet, or about one-half the height of the Woolworth Building in New York City. This building has a central tower with pyramidal top, which furnishes a notable landmark.

TOWER OF JEWELS—PANAMA-PACIFIC EXPOSITION. Quite different from the usual office or tower building was the Tower of Jewels at the Panama-Pacific Exposition at San Francisco. This 435-foot skyscraper on two hinged arches, overtopping the surrounding roofs by 250 feet or more, was the dominating feature of the architectural scheme of the exposition. The steel frame of this structure consisted mainly of six frames parallel to each other, two of them vertical, and the other four battered. The two vertical or interior frames rose to an elevation of 364 feet, being 20 feet centre to centre throughout, while the two exterior frames were battered to meet vertically the interior frames at 335 feet above the base. The tower rose vertically in the form of a cube 120 feet square in plan to a height of 152 feet, being pierced in a north and south direction by a barrel arch, the soffit of which was 119 feet above the court. This great height of vault was made possible by two hinged arches, measuring 126 feet from the bottom hinge to the centre of the lower chord. The main steel frame of the tower supported an exterior shell composed of timber, plaster, and staff, and above the rectangular section it was in the form of a successive series of decks. The tower was decorated by the studding of the exterior surface with thousands of cut glass "jewels," which, glistening in the bright sun or under the artificial lights, furnish a brilliant and dazzling spectacle. Engineering problems involved the proper construction of the steel frame, with stress analysis, calculation of temperature stresses, wind stresses, and various working stresses, in addition to the proper foundations on which cast-iron steel trusses carrying two hinged arches were placed. The architectural design was by Thomas Hastings of New York, and the structural work and substructure were designed by Messrs. H. D. Dewell and



THE TOWER OF JEWELS AT THE PANAMA-PACIFIC EXPOSITION, SAN FRANCISCO
A STEEL FRAME TOWER 435 FEET IN HEIGHT CARRIED ON TWO-HINGED ARCHES

Frank S. M. Harris of the engineering staff of the Panama-Pacific Exposition.

TARIFF. The principal interest in tariff discussion of the year related to the operation of the Democratic tariff of 1913. This revision had become operative in October, 1913, and had put into effect the following principal changes: the free list was greatly enlarged, especially by the inclusion of food products, hides, leather, boots and shoes, lumber, steel rails, and various kinds of mechanical products in which American manufacturers excel; the wool schedule admitted raw wool free, and reduced the rates on woolen yarns, cloths, carpets, stockings, and flannels; the cotton schedule was similarly reduced, and likewise greatly simplified; the silk schedule, including velvets and plushes, was modified primarily by changing the combination of specific and ad valorem rates to ad valorem only, a change in harmony with the change adopted also in the cotton and wool schedules; the iron and steel free list was greatly enlarged; the duty on sugar was reduced, and provision made for its complete elimination May 1, 1916.

A year's working of the new tariff indicated some loss in revenue. This had shown itself at the end of the first four months, and was shown again at the end of seven months. The loss, however, was slight, and showed that great skill had been used in formulating the schedules. There was a decrease of importation of raw and partly manufactured materials; an increased importation of finished manufactures, and of foodstuffs. The steel industry was not affected, the total imports for the first four months being only $10,000,000, or slightly less than for the same period the year before. Textiles were considerably affected, but not sufficiently to destroy their hold on the domestic market, or even seriously disturb their foreign trade. There had been great fear that European manufacturers would take advantage of reduced rates to dump immense supplies onto the American market; experience showed no evidence of such dumping. In seven months the increase in cotton imports was only 6 per cent. The woolen industry was much more seriously affected by strikes than by the tariff. *The American Wool and Cotton Reporter* declared, about April 1, that the majority of mills were operating full time, and that in some centres there was fear of scarcity of labor. Nevertheless the imports of woolen manufactures increased during the first seven months of the new tariff from $14,000,000 to $26,000,000 for similar periods. In the silk industry also gloomy forebodings were not fulfilled.

The Journal of Commerce, after a careful analysis in July, concluded that the tariff changes "had little real effect upon trade or industry"; that they had achieved "a considerable reduction in the burden of tariff taxes" with only slight impairment of the productivity of the tariff as a source of revenue. See FINANCIAL REVIEW.

In France there was much agitation both in Parliament and in the country in favor of retaliation on the ground that the new American law was injurious to French industry.

LINCOLN ON THE TARIFF. Prof. F. W. Taussig of Harvard University, in the *Quarterly Journal of Economics*, disposed of the oft-quoted statement popularly attributed to Abraham Lincoln, that "when we buy manufactured goods abroad we get the goods and the foreigner gets the money. When we buy the manufactured goods at home, we get both the goods and the money." He showed that the first appearance of this statement was in the *American Economist* of June, 1894, where it was attributed to an Illinois paper of a few days earlier. After following up every clue, Professor Taussig said: "It seems certain that the phrase is apocryphal. There is no evidence that Lincoln ever used it." Moreover, he pointed out, the crudeness of the reasoning would stamp it as an impossible conclusion of Lincoln's great reasoning powers.

CANADA. Schedules of a new tariff were fixed by the government and announced by Minister of Finance White in April. While the new rates were considered satisfactory by the manufacturing interests of Eastern Canada, there was considerable disappointment with them among the farmers of the West. This disappointment was due primarily to the retention of the import duty on wheat. The Underwood tariff, signed by President Wilson in October, 1913, had provided free importation of wheat for those countries granting a like privilege; but the retention of the Canadian duty prevented dominion farmers from shipping to Minneapolis and Chicago. They were thus forced to send their wheat to Liverpool, a result justified by the government because of its benefit to the Canadian railways and milling interests. Some opposition was due also to the contention that the duty on flour forced the Canadian consumer to pay higher prices than the English consumer paid for the same grades.

The farmers had, moreover, desired free agricultural implements, but secured only a reduction of 5 per cent (that is, from 17½ per cent to 12½ per cent) in the duty on harvesters, mowers, reapers, and binders. The retention of this duty was considered a favor to the steel manufacturers of Eastern Canada. The conservative papers argued that the changes on the whole were slight, that the reduction on harvesting machines was a real aid to the farmers, and that the new budget was drawn up with a view to the general benefit of Canadian industrial life.

TASMANIA. An island and State of the Commonwealth of Australia. The area is 26,215 square miles. The census of April 3, 1911, returned a population of 191,211; estimate of Dec. 31, 1912, 197,205. The capital is Hobart, whose population, with suburbs, in 1911, was 39,937. Governor in 1914, Sir William Grey Ellison-Macartney (from March, 1913). Premier and attorney-general, John Earle. See AUSTRALIA.

HISTORY. Unusual importance attached to the parliamentary affairs of Tasmania in 1914, because in the course of the year a question fundamental for the constitution of a self-governing colony—a question of the Governor's prerogative—became a burning issue in Tasmania, and a much-discussed proposition in other British colonies. It came about in this way. Early in the year, a by-election for Denison, to fill the seat of the late Sir George Davies (Liberal), was won by Mr. Sheridan (Labor). The Liberals thus lost their majority of one in the Legislative Assembly, which was now evenly balanced between 15 Laborites and 15 Liberals. On April 1, the Liberals were still further weakened by the secession of one of their number, and the Labor Opposition was able to obtain a majority of one on a vote of no confidence. The Liberal Premier (Mr. A. E. Solomon) thereupon applied to the Governor for the dissolution of Parliament, and, meeting with a curt refusal, resigned his office. Mr. Earle then formed a Labor ministry. Shortly afterwards Mr. Earle made the sensational declaration that in accepting the office of Premier he had been obliged by the Governor (Sir William Ellison-Macartney) to agree to two conditions: (1) that he should select a lawyer for the post of attorney-general, and (2) that he should at once ask Parliament to agree to an immediate dissolution. Intensely indignant at this infraction of the ministry's independence, the House at once passed the following resolution (April 10): "That in the opinion of the House, the action of the Governor in imposing on ministers, as a condition of appointment, an undertaking to agree to a dissolution of Parliament, whether the House approves of the policy of ministers or not, is contrary to the well-established usage of responsible government, and the House respectfully suggests to his Excellency that such action is undesirable, and that the Speaker be instructed to respectfully request his Excellency to forward this protest, with copies of the conditions, to the King, through the Secretary of State for the Colonies." Mr. Harcourt, as Secretary of State for the Colonies, after some delay sent an answering dispatch, which was read in the Tasmanian House of Assembly on July 8; the position taken by the House was completely vindicated, and a "severe snubbing" administered to the Governor. Mr. Harcourt took pains to state with unmistakable emphasis that the Governor had no right to impose conditions on his ministers, and must always act upon the advice of the cabinet in dissolving Parliament. Having gained its point, the House harbored no resentment toward Sir William Ellison-Macartney, but rather requested him to refrain from resigning his office after being so humiliated.

TAXATION. National Conference. The eighth National Conference on Taxation was held at Denver, Colo., Nov. 8–11, 1914. There were 200 delegates present, representing 32 States and 13 colonies. President E. R. A. Seligman in his address indicated the following as among the fundamental changes in present tax reform: The substituting of real or specific taxes for personal taxes; the transition from local to general taxation; the movement from property to produce or yield as a basis of taxation; the change from benefit to ability in taxation theory; the definition of earned and unearned incomes; movement toward progression in income taxation.

The conference had papers and discussions on the following subjects: Taxation of express companies; taxation of foreign corporations with special reference to license fees; taxation of securities; the Federal income tax law, its simplification and administration; increasing public expenditures and means of their reduction; the single tax, especially with reference to Western Canada and Colorado; taxation of irrigated lands; taxes of metalliferous mines; summary of the activities of State tax associations. The high exemption of the Federal income tax law was severely attacked, and mildly defended. The report of a Committee on Increased Public Expenditures showed that such expenditures have increased more rapidly than population, wealth, or income; that taxes have become a handicap on industry, enterprise, and investment; that probably a majority of electors pay no direct taxes; that the dispersion of power and responsibility in public finance is a fundamental and costly defect. The next Conference will be held in San Francisco in 1915.

Income Tax. Much interest was aroused by the first report of the operations of the new income tax law of 1913. In the ten months from March 1 to Dec. 31, 1913, the income tax produced $28,253,000 revenue. This was $26,000,000 below the estimate of the Treasury experts. Secretary McAdoo, being convinced that extensive evasion had been practiced, began measures to detect the missing taxpayers. He requested of all corporations and joint stock companies names of stockholders and records of dividends, and the names and salaries of employees. It was believed that a large portion of the deficit of the year was due to misunderstanding and the failure of the tax machinery to work efficiently. Analysis showed that residents of New York, New Jersey, and Pennsylvania paid nearly 58 per cent of the tax. New York, with only 10 per cent of the country's population, paid 44 per cent of the tax. New York City alone paid 28 per cent of the total. Two Southern States, on the other hand, paid only 3½ per cent of the total yield. The Treasury had estimated that the total number of taxpayers under this law would be about 425,000. The actual number was 357,598, including 79,426 with incomes between $2500 and $3333; the latter not having been included in the other estimate, there was a discrepancy between estimate and actual returns of 146,828. Moreover, not a single class of incomes showed as many returns as had been estimated. There were 44 returns made on incomes over $1,000,000, 91 on incomes between $500,000 and $1,000,000; 222 on incomes between $250,000 and $500,000; and 1241 on incomes between $100,000 and $250,000. The number of returns was in every one of these cases less than half the estimate. There were 14,746 returns on incomes between $25,000 and $100,000; 45,606 on incomes between $10,000 and $25,000; 101,718 on incomes between $5000 and $10,000; 114,480 between $3333 and $5000. Returns were made by 278,835 married persons, by 55,212 single men, and by 23,551 single women. The normal tax of 1 per cent produced $12,728,000; and the surtax on incomes above $20,000 produced $15,525,500. Of this latter sum, $9,607,400 came from incomes over $100,000.

In his annual report Secretary of the Treasury McAdoo advocated a change in the law, so as to require all persons having a gross income of $3000 to make a return. Though it did not produce the revenue expected, the Secretary declared it satisfactory. He favored greater power and discretion for the collectors as a means of reducing evasion.

Corporation Tax. The corporation excise tax of 1909 was slightly modified and transformed into the corporation income tax as a part of the income tax law of 1913. The law of 1909 continued to March 1, 1913. The report of the Commissioner of Internal Revenue showed that during the fiscal year 1913–14 the excise tax had produced $10,671,000, and the corporation income tax, $32,456,000, or a total of $43,127,000. This compared with $25,600,000 in 1913, $28,500,000 in 1912, $33,500,000 in 1911, and $21,000,000 in 1910. The increase in 1913 was attributed to the withdrawal of the $5000 exemption for each corporation, and the inclusion of holding company profits. Of the total corporation tax, New York paid more than 22 per cent, Pennsylvania 14 per cent, Illinois nearly 10 per cent, while Massachusetts, Michigan, New Jersey, Missouri, Maine, and California each paid large sums. On the other hand, Alaska, South Dakota, Wyoming, and Vermont paid very small sums. The tax returns showed that there were 316,909 corporations doing business in the United States. They reported $64,071,319,000 capital stock, and bond and other indebtedness of $37,136,215,000. Their net income was reported as $4,339,550,000, an increase of $500,000,000 over the fiscal year 1913. Few cases of failure to make return or of fraudulent return were discovered, though the Internal Revenue officials collected $2,000,000 more from corporations than the latters' first returns would have warranted.

WAR REVENUE TAX. Shortly after the outbreak of the war it became evident that the falling off of customs receipts added to the failure of the income tax to come up to expectations would necessitate the provision of additional source of Federal revenue. On September 4, President Wilson read to Congress a special message on the problem of providing the $100,000,000 estimated loss in expected revenues. On October 22 the President signed what was called the War Revenue Act. It was in large part a renewal of the Spanish-American War revenue act, and was expected to produce about $90,000,000. Among the important provisions of the law were the following: The internal revenue on beer was raised from $1.00 to $1.50 per barrel; the rates on wines, champagnes, and similar products were considerably raised; bankers were taxed in proportion to capital; brokers, including commission and customhouse brokers, at a fixed rate per annum; tobacco dealers upon volume of annual sales, and manufactures of tobacco by a sliding scale based on output. The use of adhesive stamps to collect new taxes on bonds, debentures, legal instruments, certificates of indebtedness, and other evidences of ownership of instruments indicating debts, was resorted to. A tax affecting the public at large was the imposition of 1 cent on any telephone call or telegram costing 15 cents or over. Much criticism was directed at this act on the ground that Congress could, by reducing the river and harbor and other so-called "pork barrel" appropriations, secure as much as the new law would produce. On the other hand, Secretary McAdoo showed in his annual report in December that the revenue from customs in 1913 was $30,138,000, whereas in 1914 it was only $16,271,000, due solely to a decline in importations.

Bibliography. The following titles were among the more important of the year: S. Chen, *System of Taxation in China in the Tsing Dynasty, 1644–1911;* F. W. Coker, *Administration of Local Taxation in Ohio;* H. V. Cowles and J. H. Leenhouts, *How to Assess Property in Cities and Rural Towns;* W. H. Lyon, *Principles of Taxation;* F. Mathews, *Taxation and the Distribution of Wealth;* H. M. Powell and M. Saxe, *Taxation of Corporations* (2d ed.); H. E. Smith, *United States Federal Internal Revenue History from 1861–1871;* T. P. Whittaker, *Ownership, Tenure, and Taxation of Land;* special reports of State Tax Commissions in Arizona, Kentucky, and Maryland; National Tax Association, *State and Local Taxation: Seventh Annual Conference.*

The new Federal income tax law called forth numerous guides and expositions. Prof. E. R. A. Seligman issued the second edition of his general treatise, *Income Tax.* The Wisconsin State Tax Commission prepared an explanation of the income tax law of that State.

TEACHER-MOTHERS. See FEMINISM, *passim.*

TEACHING, CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF. See UNIVERSITIES AND COLLEGES, under section entitled as above.

TECK, ALEXANDER AUGUSTUS FREDERICK WILLIAM ALFRED GEORGE, PRINCE OF. A British prince, appointed in 1914 Governor-General of Canada, to succeed the Duke of Connaught. He was born in 1874, the third son of the late Duke of Teck and the late Princess Mary Adelaide, and is the youngest brother of Queen Mary of England. In 1904 he married Princess Alice of Albany, and at the time of his appointment held the rank of major in the Second Life Guards. He saw service in Matabeleland in 1896, and also served in the South African War, winning the D.S.O. and being mentioned in dispatches. Prince Alexander has always taken a great interest in social and philanthropic matters, and his appointment was generally well received in Canada, where it was taken as indication that henceforth the Governor-General will be chosen from members of the royal family. See CANADA.

TELEGRAPHY. See WIRELESS TELEGRAPHY AND TELEPHONY.

TELEPHONY. The telephone industry felt the effects of the prevailing business depression during 1914. The year was notable for the activities of the public service commissions of various States in undertaking plans for the valuation of telephone business with a view to determining the basis for rate-making. In March, a decision was rendered in the Government suit under the Anti-Trust Law against the Pacific Telephone and Telegraph Company, forbidding it to own and control the Northwestern and Interstate Telephone Companies through which the Pacific Company had dominated the telephone service of Washington, Oregon, and Idaho. Valuation of telephone companies was actively pushed in Ohio, Maryland, Missouri, Oregon, and Washington. At the close of the year the New York State Commission had begun hearings for determining the basis of rate-making by the New York Telephone Company. The State commissions of Wisconsin and California adopted and recommended rules for standards of service and construction of telephone lines. The "independent" telephone companies of the United States reported increasing activity and a fair degree of prosperity for the year. As was the case in 1913, the Postmaster General in his annual report for 1914 again recommended and strongly urged the taking over by the government of all telephone and telegraph lines. The use of telephones in place of telegraph instruments for train dispatching on railroads was adopted to an increasing extent in the United States and Canada. The largest long distance or "toll" board in the world was opened early in the year in New York City. This was placed in a building made as nearly fireproof as possible, and was built for 274 "positions," and designed for extension when necessary to 700 positions. The underground telephone cable that had been completed between Boston, Mass., and Washington, D. C., during the previous year, amply justified its existence during the snow and sleet storms of March 1 and December 7–8, during which overhead wire service was in many places destroyed. Few striking changes in apparatus were to be noted during the year, but there was some increase in the number of automatic and semiautomatic systems in use.

Naturally the war interfered with telephone service in all parts of Great Britain and Europe, but at the end of the year it was reported that the volume of business was beginning to resume normal proportions in those countries. Many ingenious portable devices were made use of by the armies in the field for telephonic communication, portable telephone instruments and accessories becoming an indispensable part of the equipment of every army corps, and field movements were very generally controlled by their use. In India there was a great increase in the extension and use of telephones, there having been 11,000 miles of wire and cable, and 183 exchanges installed in that country during the year.

TELESCOPES. See ASTRONOMY, *Large Telescopes*.

TELESCRIBE. One of the notable inventions of the year by Thomas A. Edison, and one which seemed destined to become of great importance in commercial and legal work, was that of the telescribe, an apparatus for recording on the cylinder of an Edison dictating machine a conversation carried on over a telephone line. A person provided with a telescribe, and desiring to record the whole or a part of the conversation to be carried on by telephone, can do so by placing the telephone receiver on the telescribe box, containing the receiving diaphragm of a loud speaking telephone whose vibrations are transmitted to the receiving diaphragm of a dictating machine. There was also a watchcase receiver connected with the telescribe, and used by the hearer. The vibrations of the diaphragm in the telephone receiver, when placed on the telescribe transmitter, are transmitted through its receiver to the recorder of a dictating machine. Placing the telephone receiver on the telescribe box, and the use of automatic switches, puts the dictating machine into circuit, and the recording of the conversation begins. The person using the apparatus, by a simple control, may cause to be recorded only so much as he may desire, at the same time hearing every word that is spoken as in the ordinary use of the telephone. At the close of the year the telescribe was about to be put on the market for commercial distribution, and was expected to be a valuable adjunct to office equipment, where it was important to record any conversation. Its scope and application promised to be very wide.

TELLER, HENRY MOORE. An American public official, formerly United States Senator from Colorado, died Feb. 23, 1914. He was born in Granger, Allegany Co., N. Y., in 1830 and was educated in the common schools and in Alfred University. During the Civil War he was a major-general in the Colorado militia, and after the war he took an active interest in politics which lasted until his death. When Colorado was admitted to the Union in 1876, he became one of the first United States Senators from that State, remaining in the Senate until 1882 and becoming one of the hardest working members. In 1877–78 he was chairman of a special committee on election frauds, known as the Teller Committee. On April 17, 1882, he was resigned from the Senate to become Secretary of the Interior in President Arthur's Cabinet, serving in this post until the end of the administration when he was returned to the Senate. As early as 1880 he became interested in the silver question, and did much in and out of Congress in favor of bimetallism, being instrumental in inducing the Republican party to make a declaration for bimetallism in the national convention in 1892, and taking a leading part in the long fight in the Senate against the unconditional repeal of the Bland silver act. His stand on the money question made him the acknowledged leader of the silver Republicans, who in the national convention of 1896, strove in vain to commit the party to the doctrine of free silver. On the refusal of the party to accept such a plank in its platform, he withdrew from the convention and from that time ceased to be identified with the regular Republican party. In 1897 he was reëlected to the Senate as an independent silver Republican. At the expiration of this term he was again elected to the Senate, this time as a Democrat. In 1909 he was succeeded in the Senate by Charles J. Hughes.

TEMISKAMITE. See MINERALOGY.

TEMPERANCE. See ALCOHOL.

TENNESSEE. POPULATION. The estimated population on July 1, 1914, was 2,254,754. The population in 1910 was 2,184,789.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	3,350,000	80,400,000	$54,672,000
	1913	3,350,000	68,675,000	52,880,000
Wheat	1914	720,000	11,160,000	11,718,000
	1913	700,000	8,400,000	8,232,000
Oats	1914	350,000	8,050,000	4,266,000
	1913	300,000	6,300,000	3,339,000
Potatoes	1914	35,000	1,505,000	1,370,000
	1913	38,000	2,432,000	2,359,000
Hay	1914	800,000	a 960,000	16,320,000
	1913	900,000	1,089,000	17,642,000
Tobacco	1914	77,400	b 68,468,000	4,760,000
	1913	90,000	64,800,000	5,443,000
Cotton	1914	890,000	c 865,000	11,182,000
	1913	865,000	879,000	28,072,000

a Tons. b Pounds. c Bales.

MINERAL PRODUCTION. The most important mineral product of Tennessee is coal, the value of the annual production of which is something over one-third the total value of the mineral products of the State. Second in importance is copper, which represents about 14 per cent of the total, while the stone quarries, chiefly marble, contribute a little less than 10 per cent. The production of copper in 1913 was not materially different from that of the preceding year, showing an increase from 18,483,173 pounds in 1912, to 19,390,750 pounds in 1913; the value decreased from $3,049,724 in 1912, to $3,005,566 in 1913. The value of pig iron produced exceeds that of the copper product, but is not included in the total. The production of coal increased from 6,473,228 short tons, valued at $7,379,903 in 1912 to 6,903,784 short tons, valued at $7,883,714 in 1913. The production of coal in 1914, according to the estimates of the United States Geological Survey, was about 20 per cent less than in 1913, or about 5,500,000 short tons. The industry was somewhat affected by the decrease in the demand from the iron furnaces, but probably to a larger extent on account of the falling off in the export of cotton, which reduced purchasing ability throughout the rural communities. Coke is made in considerable quantities. The production decreased from 370,076 short tons, valued at $951,853, in 1912 to 364,578 short tons, valued at $925,430, in 1913. All the iron ore mined in Tennessee is used at blast furnaces within the State, the ores being principally hematite and brown ore. In 1913 the ore sold or used amounted to 364,092 long tons, valued at $493,556. Tennessee is the only State of importance among the Eastern States in the production of copper, and ranks ninth in this respect among all the States, the entire product being from pyritic ores mined in Polk County and smelted at Ducktown. The agitation in recent years against the emission of sulphur-laden fumes from the smelter stacks and the efforts of the operators to control them have resulted in the construction of plants for the recovery in the form of acid of the sulphur contained in the ore. The mining of phosphate rock and the quarrying of stone are important industries, each having products valued at over $1,750,000 in 1913. The clay products are also important and in the production of ball clay, Tennessee holds first place. One of the significant features connected with the mineral industry of the State in 1913 was the increase in the production of zinc, the recoverable content of the ores mined having increased from 2191 short tons, valued at $302,310, in 1912 to 5583 short tons, valued at $625,196, in 1913. Other commercial products are barytes, bauxite, cement, gold, lime, mineral paints, mineral waters, natural gas, sand and gravel, silica, silver, and tripoli. The total value of the mineral products in 1913 was $21,052,931, compared with $19,362,209 in 1912.

Transportation. The total mileage of steam railroads in the State in 1914 was 4130. The roads having the largest mileage are the Nashville, Chattanooga, and St. Louis, 899; Louisville and Nashville, 861; Southern Railway, 764; Illinois Central, 348; and the Tennessee Central, 292.

Education. The total school population of the State on June 30, 1913, was 767,585, the total enrollment in the same year being 544,017, and the total attendance 374,331. Of the total school population, 598,496 were white and 169,089 colored, and the figures for enrollment include 433,031 white and 102,670 colored pupils. The figures for daily attendance include 298,434 white and 69,558 colored pupils, the attendance in the county elementary schools being 295,523; in the county high schools, 6341; and in the city schools, 72,467. The total number of teachers was 11,234, and of these 9372 were in the county elementary schools, 392 in the county high schools, and 1470 in the city schools, with an average monthly salary of $50.44. The average length of the school term is 129 days. The total expenditures for the support of schools for the fiscal year ending June 30, 1913, was $5,866,870. The per capita expenditure on the basis of attendance was $15.69. The Legislature of 1913 passed several important measures relating to education, the most notable of which related to providing additional financial assistance to high schools. A new compulsory attendance law has had excellent results, the attendance in 85 counties showing in 1914 an increase of 22 per cent. An effort was made to have the Legislature of 1914 enact laws providing for medical inspection and measures providing for consolidation in the public schools.

Finance. The report of the Comptroller of the Treasury for the biennial period 1912–14 showed a balance in the treasury on Dec. 20, 1912, of $785,120. The total amount received during the two years was $9,366,870, and the amount disbursed was $9,779,579, leaving a balance in the treasury at the end of the period of $172,410. The interest-bearing bonded debt of the State amounts to $10,781,000. This is all in bonds due July 1, 1915, and Oct. 1, 1915.

Charities and Corrections. The charitable and correctional institutions under the control of the Board of State Charities include the Eastern Hospital for the Insane and the Tennessee Deaf and Dumb School at Knoxville; Western Hospital for the Insane at Bolivar; Central Hospital for the Insane, Tennessee Reformatory, Tennessee Industrial School, Tennessee School for the Blind, and two State prisons all at Nashville; and a branch prison at Petros.

Politics and Government. The State Legislature did not meet in 1914 as the sessions are biennial and the last was held in 1913. Elections were held for Governor, representatives in Congress, and State officers. Governor Hooper, Republican, was a candidate for reëlection and in the nominating primaries was renominated, being indorsed by a faction of independent Democrats. The Democrats nominated for Governor, Thomas C. Rye. Both parties indorsed the prohibition laws. At the election on November 3 Mr. Rye was elected, receiving 136,816 votes, compared with 115,821 for Governor Hooper, the Progressives having no candidate in this election. The total vote cast was 254,308, compared with 247,821 in 1912. The majority of Governor Hooper when a fusion candidate in 1912 was 9000. As usual, the Republicans elected representatives in the first and second districts, the Democrats in the other eight.

The important measures for regulating the sale of liquor in the State, passed at an extraordinary session of the Legislature held in 1913, went into effect on March 1, 1914. The most notable of these measures was a so-called nuisance bill, which has for its object the closing of every saloon, gambling house, and disreputable resort of the State. Any ten citizens may institute proceedings under the law. One of the measures passed in 1913 restricted the amount of liquor that might be ordered by citizens from other territory for their personal consumption and family use. The Supreme Court of the State on February 28 decided that a citizen may order as much as he wishes, but the record of receipts must be filed with the clerk of each county. An important feature of the nuisance law is the provision that intoxicating drinks cannot be sold within four miles of a school. This has practically the effect of closing the entire State to saloons. This provision has been in all the temperance laws passed in Tennessee. The four-mile law was applied first to rural districts, then to incorporated towns of 2500 or less; and then to the entire State.

STATE GOVERNMENT, 1915. Governor, Thomas C. Rye, Democrat; Secretary of State, R. R. Sneed, Democrat; Treasurer, to be elected; Commissioner of Agriculture, to be appointed; Superintendent of Education, to be appointed; Comptroller, to be elected; Adjutant-General, to be appointed; Attorney-General, Frank M. Thompson, Democrat; Commissioner of Insurance, to be appointed.

JUDICIARY. Supreme Court: Chief Justice, M. M. Neil, Democrat; Justices, A. S. Buchanan, Grafton Green, S. C. Williams, and D. Lansden; Clerk, Joe J. Roach—all Democrats.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	26	73	99
Republicans	7	26	33
Democratic majority	19	47	66

The representatives in Congress will be found in the article UNITED STATES, section *Congress*.

TENNESSEE, UNIVERSITY OF. A State institution of higher learning, at Nashville, founded in 1874. The number of students enrolled in the autumn of 1914 was 635, not including students in medicine, dentistry, and pharmacy, and the faculty numbered 183. There were no notable changes in the faculty during the year and no noteworthy benefactions were received. The income of the university at the end of 1914 was $274,007. The library contained 36,000 volumes.

TENNIEL, SIR JOHN. An English cartoonist, died Feb. 26, 1914. He was born in London in 1820. His art education was mainly self-obtained, although for a short time he was a student at the Royal Academy. He sent his first picture to the exhibition of the Society of British Artists in 1836, and in 1845 submitted a large cartoon entitled "An Allegory of Justice" in a competition for designs for the mural decoration of the new Palace of Westminster. For this latter he received a prize of $1000, and a commission to paint a fresco in the "Hall of Poets" in the House of Lords. His illustrations for an edition of *Æsop's Fables* attracted favorable comment for their artistic power, humor, and evidences of close observation, and in 1850 when Richard Doyle resigned from the staff of *Punch*, Mark Lemon, then editor, invited Tenniel to join the staff of that journal. His first cartoon was entitled "Lord Jack the Giant Killer," and showed Lord John Russell attacking Cardinal Wiseman.

Tenniel gradually took over the work of drawing the weekly political cartoon which had hitherto been the work of John Leach, and when the latter died in 1864, Tenniel continued the work alone. From that year until his retirement he missed making his weekly cartoon less than a dozen times. His work for *Punch* which comprised fifty years of service, included 2300 political cartoons and an immense number of drawings and double page cartoons. Tenniel's cartoons in the days of the Civil War in America were received with great bitterness in the North, President Lincoln being made the target for many pointed pictures. After Lincoln's assassination *Punch* sought to make amends for its attacks upon him, and Tenniel drew a cartoon showing Britannia laying a wreath on the President's deathbed under the caption "Britannia Sympathizes with Columbia." Among other famous men whom Tenniel made the subject of his sketches were Bismarck, Emperor William of Germany, Gladstone, Napoleon III, and Disraeli. Perhaps the best known of his cartoons was "Dropping the Pilot," at the time of the resignation of Prince Bismarck in 1889. It showed the young Kaiser looking over the side of the great ship of State of which he was captain, at the figure of Bismarck, the pilot, descending the ladder. It is said that both the Emperor and Bismarck were pleased by the cartoon, the original of which Tenniel gave to Lord Rosebery who in turn presented it to Bismarck.

Outside of his work for *Punch* the best known of Tenniel's work are his illustrations for Lewis Carroll's *Alice in Wonderland* and *Alice Through the Looking Glass*. These illustrations helped to make a success of these books which in their first editions, illustrated by another hand, found little sale. Other books which he illustrated were *Lalla Rookh* and the *Ingoldsby Legends*. Tenniel was made a knight in 1893 and in 1901, after 50 years' service, he retired from the staff of *Punch*. When a boy Tenniel lost the sight of one eye by an accident, and did his best work under this handicap, becoming in his later years totally blind. He outlived all his contemporaries on the staff of *Punch*, including Thackeray, Mayhew, Mark Lemon, and Du Maurier.

TENNIS. See LAWN TENNIS.

TERRESTRIAL MAGNETISM. See CARNEGIE INSTITUTION.

TETANUS. The twelfth annual summary of Fourth of July injuries compiled by the *Journal of the American Medical Association* shows that only three cases of tetanus were reported in 1914 as against 150 in 1909, since which year the cases have been steadily decreasing. In all three instances the disease was fatal, two of them resulting from blank-cartridge wounds and one from a gunshot wound. Besides these deaths 37 persons were killed by fireworks, making a total of 40 deaths, or 8 more than in 1913. Five were killed outright by firearms, 6 by powder explosions, bombs, or torpedoes, 4 by cannon, and 5 as a result of blood-poisoning. The most serious fact presented in 1914 was that 16 persons, mostly little girls or small children, were burned to death from fireworks, three of these being due to the supposedly harmless "sparklers." The total number of injuries in 1914 was 1506, an increase of 343 over 1913 and of 518 over 1912. New York had 250 casualties, or almost double the number reported in 1913. Illinois had 95, Massachusetts and Connecticut respectively, 87 and 77, the largest total since 1910. Pennsylvania still led the list with 487 casualties, 241 of which occurred in Philadelphia. The results of the accidents vary from total blindness, 3 cases; to loss of one eye, 13 cases; loss of legs, arms, or hands, 16 cases; and the loss of one or more fingers, 67 cases; 402 injuries were due to the giant firecrackers, which continue to hold first place as the cause of lacerated wounds, and were responsible for most of the injuries to the eyes, hands, and fingers. The number of injuries caused by firearms showed a marked increase, 231 cases being reported, including five deaths. As usual the innocent bystander was the victim rather than the reckless user of the weapon. The *Journal* again reiterated its contention that the responsibility rests with the city governments. The increased number of killed and injured indicated a relaxation in the enforcement of the ordinances so ably undertaken two years before. It was believed instead of a relaxation of restrictive measures, the use of fireworks should be entirely prohibited.

TEXAS. POPULATION. The estimated population on July 1, 1914, was 4,257,854. The population in 1910 was 3,896,542.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn ...	1914	6,400,000	124,800,000	$92,352,000
	1913	6,800,000	163,200,000	133,824,000
Wheat ..	1914	1,082,000	14,066,000	13,925,000
	1913	780,000	13,650,000	12,831,000
Oats ...	1914	900,000	22,500,000	10,800,000
	1913	1,000,000	32,500,000	16,575,000
Barley ..	1914	8,000	200,000	140,000
	1913	7,000	168,000	136,000
Rice ...	1914	239,700	8,102,000	7,454,000
	1913	303,000	9,696,000	8,339,000
Potatoes	1914	44,000	2,684,000	2,791,000
	1913	45,000	2,340,000	2,621,000
Hay ...	1914	450,000	*a* 738,000	7,722,000
	1913	400,000	464,000	5,475,000
Tobacco	1914	200	*b* 140,000	39,000
	1913	200	210,000	52,000
Cotton .	1914	11,980,000	*c* 4,560,000	148,528,000
	1913	12,597,000	3,945,000	217,327,000

a Tons. *b* Pounds. *c* Bales.

MINERAL PRODUCTION. Texas ranks nineteenth among the States in the value of its mineral production. In the percentage of its increase in 1913 over 1912, Texas was exceeded only by one other State—Oklahoma. The total value of mineral products increased from $22,797,015 in 1912 to $31,666,910 in 1913. The increases were made in the output of all the products, but especially in that of petroleum, which has first place in the mineral products of the State. Texas now ranks fourth among all the States in the quantity of petroleum produced and seventh with respect to the value of this product. The production increased from 11,735,057 barrels, valued at $8,852,713 in 1912, to 15,099,478 barrels, valued at $14,675,593, in 1913. Second in importance is coal, including lignite or brown coal, the combined production of which amounted in 1913 to 2,429,144 short tons, valued at $4,288,920, compared with 2,188,612 short tons, valued at $3,655,744 in 1912. Texas is the only State in the Union that produces considerable quantities of both bituminous coal and true lignite, or brown coal. The only other mineral products which contribute as much as $1,000,000 to the total value are asphalt, cement, clay, and natural gas. The manufacture of Portland cement is an industry barely five years old at the end of 1913, but the value of the cement produced in that year was $2,663,063, an increase of over $600,000 from the product of 1912. The value of natural gas produced in 1913 showed a substantial increase, amounting to $2,073,823, compared with $1,405,077 in 1912. The asphalt produced in Texas, which is principally residue obtained from the heavy asphaltic oils, amounted to 122,026 short tons in 1913, with a value of $1,970,354. The output of the metal mines of the State in 1914, according to the estimates of the United States Geological Survey, amounted to $9302 in gold, 581,000 ounces of silver, 190,000 pounds of lead, 30,000 pounds of copper, and 190,000 pounds of zinc. These figures show a considerable increase for gold and silver, a large decrease for zinc, and smaller decreases for copper and lead. In addition to this a small quantity of natural asphalt was produced. Other mineral products of value are gypsum, salt, limestone, granite, copper, mineral waters, quicksilver, sand and gravel, sulphur, and zinc. Sulphur operations, with methods similar to those employed at Sulphur City, La., were begun at Bryan Heights, in Brazoria County, in 1913.

TRANSPORTATION. The total mileage of railways, including main line, branches, and spurs, in 1913 was 15,283, an increase of 342 miles over the mileage for 1912. The roads having the longest mileage are the Galveston, Harrisburg, and San Antonio, 1331; the Missouri, Kansas, and Texas, 1119; the International and Great Northern, 1106; and the Texas and New Orleans, 1038.

EDUCATION. The latest statistics of education available are for 1912. In that year there were 1,017,033 children of school age in the State, of whom 812,896 were white and 204,337 were colored. The white children included 79,491 Mexicans and 29,345 Germans.

FINANCE. The report of the State Treasurer for the fiscal year 1914 shows a balance in the treasury on Sept. 1, 1913, of $333,615. The receipts for the year amounted to $14,274,728, and the disbursements to $12,886,734, leaving a balance on hand on Sept. 1, 1914, of $1,721,609. The bonded debt on Sept. 1, 1914, amounted to $3,977,500.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions controlled by the State include the State Blind Institute, the State Deaf and Dumb Institute, the State Lunatic Asylum, the Southwestern Insane Asylum, at San Antonio; the North Texas Insane Sanitarium at Terrell; the Confederate Home, the Deaf, Dumb, and Blind Institute, and the Confederate Women's Home, at Austin; the Epileptic Colony at Abilene; the State Orphans' Home at Corsicana; the State Industrial School for Boys at Gatesville; and the State Tuberculosis Sanatorium at Carlsbad.

POLITICS AND GOVERNMENT. The State Legislature met in two extraordinary sessions, in August, September, and October of 1914, having been called by the Governor for the purpose of taking some action towards remedying the cotton situation, which at that time confronted the people of Texas in a rather unfavorable way. The outcome of these sessions was confined virtually to the enactment of a law creating and organizing a public warehouse system for the storage of cotton under State supervision. The Governor failed in his effort to have the Legislature pass a law prohibiting the planting of a larger cotton acreage than was planted the previous year, and he also failed in his endeavor to have the Legislature create a bank of Texas, to occupy the same relation to the State banks of Texas that the Federal reserve bank bears to the banks of its district. A number of pieces of legislation of minor importance were enacted.

Elections were held for State officers and for Congressmen. In the Democratic primaries held July 25 James E. Ferguson was nominated for Governor, defeating Thomas H. Ball. The two chief issues in the campaign were prohibition and the restriction of land rentals. Mr. Ferguson's principal plank demanded a law to prohibit a charge for the rental of farm land in excess of a fourth of the cotton and a third of the grain raised by the tenant. His opponent, Mr. Ball, agreed with him as to the necessity of giving relief to the tenant, but he did not concur in the Ferguson plan, proposing instead a system of State loans with which to help the tenant farmer to purchase land. At the election of November 3 Mr. Ferguson, the Democratic nominee, was elected Governor, the vote being: Ferguson, Democrat, 175,804; Etheridge, Progressive, 1974; Philp, Republican, 11,411; Meitzen, Socialist, 25,083; Choate, Socialist Labor, 490. At this election there was also submitted an amendment to the constitution providing for the initiative and referendum, which was defeated.

STATE GOVERNMENT, 1914. Governor, Oscar B. Colquitt; Lieutenant-Governor, Will H. Mayes; Secretary of State, F. C. Weinert; Attorney-General, Benjamin F. Looney; State Treasurer, J. M. Edwards; Comptroller, W. P. Lane; Superintendent of Public Instruction, W. F. Doughty; Land Commissioner, J. T. Robinson; Commissioner of Agriculture, Ed. R. Kone—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, Thos. J. Brown; Associate Justices, N. Phillips and W. E. Hawkins; Clerk, F. T. Connerly—all Democrats.

STATE LEGISLATURE, 1913.

	Senate	*House*	*Joint Ballot*
Democrats	30	108	138
Republicans	1	1	2
Democratic majority	29	107	136

The representatives in Congress will be found in the article UNITED STATES, section *Congress.*

TEXAS, UNIVERSITY OF. A State institution for higher education, founded at Austin, Texas, in 1883. The total enrollment in all departments of the university in the autumn of 1914 was 2441, divided as follows: College of Arts, 1468; Graduate Department, 75; Law Department, 343; Medical Departments, 280; Engineering Department, 275; Education Department, 421. There were 191 members in the faculty. During the year a School of Journalism opened with William H. Mayes at its head. J. M. Bryant, of the University of Illinois, succeeded N. H. Brown, resigned, as professor of electrical engineering. Forrest E. Cardullo became head of a new department of mechanical engineering. Dr. James F. Royster, of the University of North Carolina, was appointed professor of English, and Dr. A. B. Wolfe, of Oberlin College, was appointed professor of sociology and economics. S. E. Mezes, president of the university, resigned, to become president of the College of the City of New York. There was a gift of $25,000 given to the university by Regent George W. Littlefield, to establish the Littlefield Fund for Southern History. The institution is supported mainly by State appropriations. The productive funds amount to $2,050,000, and the annual income from this endowment amounts to $165,000. The library contains about 110,000 bound volumes and 30,000 pamphlets.

TEXAS FEVER. See VETERINARY MEDICINE.

TEXTILE MANUFACTURING. Many abnormal conditions prevailed in the textile industries in 1914, not the least of which naturally was the great European War, with the various complications it presented. In the United States financial depression had its effect, and the extraordinary conditions surrounding cotton and wool were also responsible for much unrest and lack of confidence and harmony in the different industries. With the outbreak of the war a number of European purchasing representatives were in the market for cloth, and cloth for uniforms, shirtings, etc., was readily and speedily manufactured by a large number of American plants. At the same time this did not compensate for the quietness of the domestic business. In many lines consumers were buying only what their immediate needs demanded. The embargo on wool, which was declared as a war measure and which prevented shipments of wool and other products from British to non-British ports, was most disturbing, especially as the American clip supplies normally only about 37 per cent of the wool used in the United States. The war also cut off from the United States the supply of wool from Turkey, Russia, and elsewhere in Europe. Cotton (q.v.) likewise had an erratic course during the year, with low prices and little domestic demand.

The record of new mill construction in the United States for 1914 as compiled by the *Textile World Record* of Boston showed 245 new mills, as compared with the annual average of 260 new mills for the nine preceding years. This record was surprisingly good in view of general business conditions during the year and it was interesting to note that the cotton, wool, and silk branches of the industry showed but slight decreases in the number of new establishments as compared with 1913. The knitting industry reported 110 new mills as compared with 142 in the previous year, while miscellaneous mills increased from 30 in 1913 to 37 in 1914. These items are shown in the accompanying table.

COMPARISON OF NEW MILL CONSTRUCTION FOR FIVE YEARS

	1914	*1913*	*1912*	*1911*	*1910*
Cotton	26	27	37	32	67
Wool	21	24	24	20	31
Knitting	110	142	122	92	113
Silk	51	54	46	38	34
Miscellaneous	37	30	36	26	29
	245	277	265	208	274

The distribution of the cotton manufacturing industry is always a matter of interest. In 1913, 75 per cent of the new spindles in cotton mills were reported from the Southern States and only 25 per cent from the North, whereas in 1914 the northern section of the country claimed 44 per cent of the new cotton spindles. North Carolina led all other States in number of new mills, viz., seven, equipped with 93,700 spindles and 1700 looms. The new Naumkeag Mill at Salem, Mass., to take the place of a structure destroyed in the conflagration at that city, was the largest under construction during the year, with 100,000 spindles and 3000 looms. The accompanying tables show the statistics by States.

COMPARISON OF SPINDLES IN NEW COTTON MILLS FOR THE FIVE YEARS, 1910-1914

	1914	*1913*	*1912*	*1911*	*1910*
N. England	109,000	75,000	94,400	170,500	468,714
S. States	136,172	250,760	437,000	172,000	214,028
Middle and Western	....	7,000	1,700	4,920	12,500
Totals	245,172	332,760	533,100	347,420	695,242

NEW COTTON MILLS, 1914

	No.	*Spindles*	*Looms*
New England States:			
Connecticut	1	......	....
Massachusetts	4	109,000	3,245
Rhode Island	1	......	24
Total	6	109,000	3,269
Southern States:			
Alabama	1	5,472	....
Georgia	1	25,000	500
Kentucky	2	2,000	....
North Carolina	7	93,700	1,782
South Carolina	1	......	20
Tennessee	1	10,000	....
Total	13	136,172	2,252
Middle States:			
Maryland	1	......	30
New Jersey	2	......	74
Pennsylvania	2	......	....
Total	5	......	104
Western States:			
Indiana	1	......	....
Missouri	1	......	....
Total	2	......	....
Grand total	26	145,472	5,625

NEW WOOLEN AND WORSTED MILLS, 1914

New England:	*No.*	**Western States:**	*No.*
Connecticut	1	Illinois	1
Massachusetts	3	Indiana	1
Rhode Island	3	Washington	1
Total	7	Total	3
Middle States:		**Southern States:**	
New York	1	Kentucky	1
Pennsylvania	9	Total	1
Total	10	Grand total	21

During the year 21 new woolen and worsted mills were built, as compared with 24 in 1913. Of these nine were in Pennsylvania, the others being located in eight other States, of which Massachusetts and Rhode Island each had three. Eleven of the 21 were worsted weaving and spinning mills, 7 were woolen yarn or cloth mills, and 3 were carpet mills. The larger organizations like the Cleveland Worsted Mills Company and the American Woolen Company made important additions to their plants during the year. The total 21 new mills compared with 24 for 1913; 23 for 1912; 17 for 1911; and 31 for 1910.

The new knitting mills exhibited a decided tendency toward concentration, 70 per cent of the total being located in the Middle States and 44 per cent of the total in Pennsylvania. New knitting mills in the South decreased from 24 in 1913 to 18 in 1914, while the Western States showed a shrinkage from 25 last year to 9 this year. Thirty-two of the new knitting mills manufacture sweaters and other outer garments, showing the continued demand and it was said that much of this product was desired by the contesting nations in Europe.

NEW KNITTING MILLS, 1914

New England:	*No.*	**Western States:**	*No.*
Maine	3	California	1
Massachusetts	1	Illinois	1
New Hampshire	1	Minnesota	1
Rhode Island	2	Nebraska	1
		Ohio	1
Total	7	Wisconsin	4
		Total	9
Middle States:	*No.*	**Southern States:**	*No.*
Delaware	1	Kentucky	1
Maryland	2	Louisiana	1
New Jersey	8	North Carolina	12
New York	17	Tennessee	3
Pennsylvania	48	West Virginia	1
Total	76	Total	18
		Grand total	110

NEW SILK MILLS, 1914

Maryland:	*No.*	**New York:**	*No.*
Ribbon	1	Throwing	1
		Broad silks	2
Total	1	Ribbon	1
Massachusetts:		Total	4
Ribbon	1	**Pennsylvania:**	
Broad silks	1	Silk yarns	4
Total	2	Ribbon	4
		Silk throwing	5
New Hampshire:		Broad silks	8
Ribbon	2	Total	21
Total	2	**Rhode Island:**	
New Jersey:		Broad silks	1
Broad silks	13	Silk yarns	1
Silk throwing	2	Total	2
Ribbon	3		
Embroideries	1	Grand total	51
Total	19		

The tendency towards concentration was still manifested by the location of mills in New Jersey and Pennsylvania. See SILK.

THEATRE. See ARCHITECTURE; DRAMA.

THEOLOGICAL SCHOOLS. See UNIVERSITIES AND COLLEGES.

THERMIONS. See PHYSICS.

THOMAS, BRANDON. An English playwright and actor, died June 19, 1914. He was born in Liverpool in 1856, and was educated at private schools to become a civil engineer, having previously had some experience in the navy and being interested in shipbuilding. His adoption of the stage was the result of his success as an entertainer in amateur performances. He was for several years an actor, but soon retired to become an author, his first successful play being *Comrades*, written in 1882. This was followed by several others which had no great vogue, but in 1892 he wrote *Charley's Aunt*, which was produced in the same year with W. S. Penley in the leading rôle, and became the most successful farce ever written in the English language. It was acted by Penley four years, was translated into every European language, and had a great success in the United States. It is perennially revived in London. *Marriage* was produced in the same year and was also successful. Other plays written by him are: *Women Are So Serious* (1901); *Fourchette & Co.* (1904); *A Judge's Memory* (1906). Thomas appeared in the United States in a minor part as a member of the company supporting Rosina Vokes.

THOMSON, JAMES WILLIAM. Rear admiral (retired) of the United States navy, died March 17, 1914. He was born in Wilmington, Del., in 1836, and received an academic education. In 1856 he was appointed third assistant engineer of the United States navy, and became first assistant engineer in 1859 and chief engineer in 1862. He served throughout the Civil War and took part also in the Spanish-American War, being retired from active service in 1896. In 1906 he was advanced to the rank of rear admiral in recognition of his services during the

Civil War. At various times he was a member of the board of the Naval Academy, of the board of inspection, of the board of examiners, and examining board of the navy.

TIBET. A central Asian dependency of China, with an estimated area of 756,000 square miles carrying a population of 2,000,000. Lhasa is the capital, with between 15,000 and 20,000 inhabitants, among whom are included many Buddhist monks, the city being the home of Buddhism. A primitive agriculture is practiced, and gold is said to exist. Trade is largely with China and India. The Dalai Lama, restored to his office in 1912 by the Chinese government, resides at Lhasa.

TICK, CATTLE. See VETERINARY MEDICINE.

TIEGHEM, VAN PHILIPPE. A French botanist, died April 29, 1914. He was born at Bailleul in the department of the Nord in 1839, and was educated at a normal high school, graduating in 1858. He was perpetual secretary of the Academy of Sciences, one of the five academies that go to make up the French Institute, was also a professor at the Museum of Natural History, and was long an officer of the Legion of Honor. Among his many writings on botanical subjects was a treatise on botany in two volumes and *Elements of Botany,* two volumes. He was editor of the botanical section of the *Annales des Sciences Naturelles,* in which much of his most distinguished work of recent years appeared.

TIMBER SURVEY, NATIONAL. See FORESTRY.

TIME, STANDARD. On May 1, 1914, the city of Cleveland, Ohio, passed an ordinance, making Eastern Time instead of Central Time the legal standard for that city, and efforts were being made by the city to induce the railways going into it to use Eastern instead of Central Time. Other Ohio cities were agitating for similar action, and it was proposed that the whole State should adopt Eastern Time at its standard. This action was one threatening more than local consequences, for its extension would mean the disorganization and consequent revision of the whole system of Standard Time throughout the United States, which has been in vogue since 1883. Cleveland is situated about midway between the meridians of 75° and 90° West of Greenwich, on which Eastern and Central Time respectively are correct, and consequently there would be a difference of half an hour between the true astronomical time for Cleveland and that of either meridian. This is one of the first attempts to accomplish a change of hours in the ordinary economy of a community, by changing time standards, although it had been attempted in England under the guise of the famous Daylight Saving Bill.

TIME SIGNALS. See WIRELESS TELEGRAPHY AND TELEPHONY.

TIN. There is practically no production of tin in the United States. There was obtained in 1913, an equivalent of only 84 short tons of tin ore, containing 60 per cent of metallic tin, valued at $36,970, the larger part of which was taken from Buck Creek, Alaska. Smaller quantities were taken in other parts of Alaska, South Dakota, and South Carolina. The Federated Malay States produced by far the greatest quantity of tin. During 1913 the shipments amounted to 56,142 short tons, against 54,231 tons in 1912. Considerable quantities were also produced from Bolivia. The world's tin deliveries in 1913 amounted to 130,009 short tons. See CHEMISTRY, INDUSTRIAL.

TIRPITZ, ALFRED P. F. VON. See WAR OF THE NATIONS.

TOBACCO. The tobacco crop of the United States in 1914, according to the preliminary estimates of the United States Department of Agriculture, was 982,715,000 pounds, as compared with 953,734,000 pounds in 1913, and a five-year average of 996,087,000 pounds. The production in the leading States was as follows: Massachusetts 11,555,000 pounds; Connecticut 35,754,000; Pennsylvania 47,995,000; New York, 5,980,000; Maryland 16,000,000; Virginia 104,000,000; West Virginia 8,856,000; North Carolina 146,250,000; South Carolina 33.580,000; Ohio 78,120,000; Indiana 12,150,000; Wisconsin 53,808,000; Kentucky 353,535,000; and Tennessee 63,468,000 pounds.

The total area of cigar tobacco was 172,900 acres, compared with 168,000 in 1913, an increase of 4900 acres. Pennsylvania was the only State showing a decrease. All the other principal States had a larger area. The chewing, smoking, snuff, and export types were grown on 967,600 acres, against 1,036,300 acres in 1913, a decrease of 68,700 acres. The total area in tobacco was 1,151,000 acres, 5.4 per cent less than in 1913.

The preliminary report of the United States Commissioner of Internal Revenue shows that tax was paid upon 8,707,626,230 cigars, 16,427,086,016 cigarettes, 32,766,741 pounds of snuff, and 412,505,213 pounds of chewing and smoking tobacco. Little cigars increased over 3,000,000 in number and manufactured tobacco (smoking, chewing, and snuff) over 8,000,000 pounds as compared with 1913, while the number of large cigars decreased by 28,000,000. The internal revenue receipts for the fiscal year were $79,986,639.68, or more than in 1913 by $3,197,214.93. The tax measure due to the European War imposed additional revenue taxes on tobacco manufacture and sale.

A bulletin incorporating the general results of nearly 20 years' experimental work on tobacco growing and handling was issued by the Connecticut Experiment Station (E. H. Jenkins, "Studies on the Tobacco Crop of Connecticut," *Connecticut State Experiment Station Bulletin 180*).

The British Colonial Office has secured the services of an American tobacco expert to develop the tobacco industry of Ceylon and improve the quality of the product. Excellent crops are already produced in the Jaffna district but the product is suited only for native use. American varieties are being tested. Uruguay has authorized a monopoly of the tobacco industry, granting for 25 years the sole right to manufacture and sell tobacco in that country. The monopoly is given the right to purchase all tobacco factories in the republic at a fair assessed value, or to take them into the combine as shareholders. The payment to the government is to be graduated, amounting to over $2,000,000 annually after the twelfth year. It is thought the plan will assure a larger return to the government than the former system of taxation. The estimated annual consumption of tobacco in Uruguay is 7,150,000 pounds. See CANCER.

TOGO. A German West African protectorate lying between Dohomey and the Gold Coast. Estimated area, 87,200 square kilometers (33,668 square miles); estimated native population, 1,032,000. Whites numbered, Jan. 1, 1913, 368. The export of cotton in 1912 was 550,896 kilos; of cacao, 282,982. The imports and exports for 1911 were valued at 9,620,000 and 9,318,000 marks respectively. Imports and exports in 1912 were valued at 11,428,000 and 9,959,000 marks respectively; in 1913, 10,631,000 and 9,138,000. Of the exports in 1912, palm kernels were valued at 3,380,000 marks; palm oil, 1,413,000; rubber, 976,000. Vessels entered in the 1912 trade, 258, of 5,721,832 tons. A railway connects Lome with Anecho in Little Popo, 44 kilometers; with branches from Lome to Polime, 119 kilometers, and Atakpame, 160 kilometers. For 1913–14 the budget balanced at 4,057,136 marks. Lome is the capital and chief port. Duke Adolf Friedrich of Mecklenburg-Schwerin was Governor in 1914.

On August 8, shortly after the outbreak of war between Great Britain and Germany, British warships captured Port Lome on the coast of Togo. After a skirmish between the British and the German forces on August 18, the colony was surrendered on August 25. Consult the article on the WAR OF THE NATIONS.

TOMBO, RUDOLF, JR. American scholar and educator, died May 22, 1914. He was born at Harmen, Germany, in 1875, and removed to the United States with his parents when he was still a child. He graduated from the College of the City of New York in 1895 and after two years in business entered Columbia for a graduate course, receiving in 1893 the degree of master of arts, in 1899 master of science, and in 1901 doctor of philosophy. He became a tutor at Columbia in 1900, and rose through various steps to the post of associate professor of Germanic languages in 1911. In 1902, immediately after the election of Nicholas Murray Butler as president of Columbia, Dr. Tombo was appointed registrar of the university, holding this position until 1908, when he became secretary of the alumni council. He resigned the secretaryship in 1911 to become director of the Deutsches Haus at Columbia, which is the centre of Germanistic learning in New York City. He organized the alumni of Columbia University, and by means of his efforts the alumni council of the university became one of the most progressive college alumni organizations in the United States. At the time of his death Dr. Tombo was secretary of the Germanistic Society and was also editor of the *Germanistic Society Quarterly*. For twelve years he was editor and business manager of the *Columbia University Quarterly*.

TONGKING. The northernmost division of the colony of French Indo-China (q.v.). The capital, Hanoï, with 103,238 inhabitants, is also the capital of French Indo-China.

TORNEY, HENRY. An American surgeon, died in Washington, D. C., Dec. 27, 1913. He was born June 1, 1850, and graduated in medicine at the University of Virginia in 1870. He entered the United States navy as assistant surgeon in 1871, became passed assistant surgeon (1874), and in the following year resigned from the navy and was appointed first lieutenant and assistant surgeon, United States army. He was made captain and assistant surgeon in 1880; major and surgeon in 1894; lieutenant-colonel in 1903; and colonel, medical corps, in 1908. His period of service was brilliant and highly useful, especially on the administrative side. He was at West Point (1894–98), and in May-October of the latter year had charge of the United States army hospital ship *Relief*, serving in Cuba, Porto Rico, and the United States. After the close of the Spanish-American War he was for a short time instructor in hygiene at the Army School, Fort Leavenworth; and later was at the head of the Army and Navy General Hospital, Hot Springs, Ark. (1899–1902). He was in command of the First Reserve Hospital, Manila, P. I. (1902–03); after his return he was appointed chief surgeon of the Department of California (1903); and later was in charge of the General Hospital, Presidio, Cal. (1904–08). At the time of the San Francisco earthquake and fire he directed the sanitary work, and proved to be a highly capable administrative officer. On Jan. 14, 1909, he was appointed surgeon-general of the United States army, and removed to Washington. He was a fellow of the American Medical Association; president of the Association of Military Surgeons of the United States at its Milwaukee meeting (1911); and chairman of the War Relief Committee of the American National Red Cross.

TORONTO, UNIVERSITY OF. An institution for higher education, founded in 1827 as Kings' College, at Toronto, Canada. The enrollment in the several departments of the university in the autumn of 1914 was 4000, including about 250 summer session students, and the faculty numbered 453. During the year the dean of the faculty of applied science died, and Dr. Ellis was appointed acting dean. Doctors Reeve, McDonagh, and Ernest Jones resigned from the faculty of medicine, Dr. McCurdy retired from the faculty of arts, and Dr. H. T. J. Coleman and Mr. W. E. McPherson resigned from the faculty of education. Dr. Peter Sandiford was appointed to succeed Dr. Coleman in the faculty of education. The income of the university for 1913–14 was $856,726 and the expenditures amounted to $942,839. The difference was supplied by a special legislative grant. There were 138,658 bound volumes and 46,648 pamphlets in the library.

TORPEDOES. See NAVAL PROGRESS; SUBMARINES.

TOWNESEND, STEPHEN. An English surgeon and author, died May 20, 1914. In early life he was for a time on the stage under the name of Will Dennis, when he appeared in several well-known plays. In 1889 he married Frances Hodgson Burnett, the American novelist. He was well-known as a lecturer and examiner on medical subjects. His published writings include: *Dr. Tuppy; A Thoroughbred Mongrel; A Leaf from a Hospital Daybook;* and *Peep Show Vivisection.*

TOWN PLANNING. See CITY PLANNING.

TRADE COMMISSION BILL. See UNITED STATES, section *Congress.*

TRADE UNIONS. The progress of the movement of organization among laborers continued in 1914 without any notable variations from the normal course. There were fewer manifestations of the extreme radicalism attending the Syndicalist propaganda at home and abroad (see SYNDICALISM), and the Industrial Workers of the World (q.v.) in the United States. The movement toward industrial unionism, however, was clearly making advance in the United States, England, and Germany, as indicated in the paragraphs following and in the article LABOR, AMERICAN FEDERATION OF. The labor wars of the year were numerous and in some cases prolonged and bitter. They are treated under STRIKES. The agitation of trade-unionists in the United States for a modification of the rules governing the issue of injunctions and for the exemption of labor organizations from the anti-trust law culminated in sections of the Clayton Anti-Trust Act as described hereunder. See also INJUNCTION; and BOYCOTT.

LEGISLATION. There was very little legislation bearing directly on trade unions enacted in 1914. The most important was contained in those sections of the Clayton Anti-Trust Act noted below. New laws of interest to trade unions are referred to under ARBITRATION AND CONCILIATION, INDUSTRIAL; INJUNCTION; and LABOR LEGISLATION.

Louisiana made it unlawful to coerce, require, or influence an employee to enter into any contract, actual or implied, not to become or remain a member of any labor organization as a condition of securing or retaining employment. Massachusetts provided that persons seeking employment may not be prosecuted for entering into any agreement or combination for the purpose of shortening hours, increasing wages, or bettering working conditions, or for any act, not in itself unlawful, done in furtherance of these purposes.

Clayton Bill. The most important bit of labor legislation of the year was comprised in certain sections of the Clayton Anti-Trust Act whereby labor organizations and other nonprofit-making associations were exempted from the anti-trust laws. This exemption had been striven for by the American Federation of Labor for several years; agitation for it had been especially vigorous on account of the fining of the Hatters' Union in the famous Danbury Hatters' Boycott case. (See BOYCOTT.) In 1913 and again in 1914 the appropriation of $300,000 to the Department of Justice for the enforcement of anti-trust laws was accompanied by a proviso that no part of that money should be spent in prosecuting any person or persons combining to increase wages, shorten hours, or otherwise better the conditions of labor.

The Clayton Act signed October 15 went much farther, section 6 containing the following provision: "That the labor of a human being is not a commodity or article of commerce. Nothing contained in the anti-trust laws shall be construed to forbid the existence and operation of labor, agricultural or horticultural organizations, instituted for the purposes of mutual help, and not having capital stock or conducted for profit, or to forbid or restrain individual members of such organizations from lawfully carrying out the legitimate objects thereof; nor shall such organizations, or the members thereof, be held or construed to be illegal combinations or conspiracies in restraint of trade under the anti-trust laws." The first sentence of this section was declared by President Samuel Gompers "the industrial Magna Charta upon which the working people will rear their structure of industrial freedom." The New York *World* considered this section "the most impressive legislative reversal of judicial decisions that has taken place in this country since the Dred Scot judgment was overturned by the Civil War." President Wilson declared it, though very important, "the natural and inevitable corollary of a law whose object is individual freedom and initiative as against any kind of private domination."

Injunctions in Trade Disputes. For several years the American Federation of Labor led a vigorous agitation in favor of limiting the power of the courts in the issue of injunctions. This agitation culminated in sections 20–25 inclusive of the Clayton Anti-Trust Act, signed October 15. Vigorous demand for a limitation of the power of the courts in the issue of injunctions grew out of the long-continued legal controversy resulting from the boycott of the American Federation of Labor against the Buck's Stove and Range Company, and especially resulting from the injunction issued by Justice Wright of the Supreme Court of the District of Columbia. (See BOYCOTT and INJUNCTION.) This demand culminated in sections 20–25 inclusive of the Clayton Anti-Trust Act. These sections declared that no restraining order or injunction may be granted by any United States court in labor disputes regarding the terms or conditions of employment, unless such order be necessary to prevent irreparable injury to property or to property rights, for which injury no adequate remedy at law exists. Moreover no injunction may prohibit any person or persons, singly or in concert, from stopping work; peacefully persuading others to work or to stop work; from attending any place where they may lawfully be for the purpose of obtaining or giving information or peacefully persuading others; from ceasing to patronize or to employ any party to such dispute, or peacefully persuading others to do so; from giving or withholding strike benefits or other things of value; or peacefully assembling in a lawful manner and for lawful purposes; or from doing anything which may lawfully be done in the absence of such dispute. Moreover none of these acts may be considered violations of any law of the United States.

All the foregoing limitations were contained in section 20. Subsequent sections dealt with the treatment of persons accused of violating injunctions. Labor leaders, especially when the principal officers of the American Federation of Labor were sentenced to fines and imprisonment, contended that punishment for such violations ought not to be at the discretion of the judge issuing the order. The Clayton Anti-Trust Act provides that any person willfully disobeying any order by a United States court provided the act thus committed should be of such character as to constitute also a criminal offense under Federal or State law shall have a right of trial by jury. Persons accused of violating an injunction may be ordered by the court to show cause why they should not be punished therefor. If the court be not sufficiently satisfied of the innocence of the accused, trial may be had by the court, unless the accused demand trial by jury. If found guilty judgment may be entered at the discretion of the court. Contempts committed in the presence of the court are exempted from this privilege.

DYNAMITE CASES. The notorious criminal suits against officers and members of the Structural Bridge and Iron Workers' Union as the result of numerous conspiracies to transport dynamite and use it in the destruction of life and property were further advanced. There were originally 40 defendants of whom 38 were found guilty in the United States District Court at Indianapolis, December, 1912. All but five of these were sentenced to imprisonment at the Leavenworth penitentiary. Thereafter 30 of these appealed their cases. On January 6 the United States Circuit Court of Appeals at Chicago affirmed the sentences imposed by the lower court on 24 of them, but remanded the remaining six to the lower court for retrial. Attorneys for the 24 then applied for a rehearing.

GREAT BRITAIN. During the past few years the trade union movement in Great Britain has been marked by a tendency toward the formation of industrial unions, a wide extension of the demand for an eight-hour day and the increased insistence on the establishment of higher minimum wages. Thus on April 23 there was held in London a conference by the 57 delegates representing the Miners Federation, the Transport Workers Federation, and the National Union of Railway Men. These three organizations with respectively 800,000, 250,000, and 300,000 members are large industrial unions, the last two formed in recent years. A resolution was adopted calling for a working agreement between the three bodies. On May 26 a special committee from these organizations took further steps toward formulating a working agreement. In the building trades also was observable a movement toward larger federation on industrial lines.

The demand for the establishment of considerable minimum wages was illustrated by a movement undertaken by the National Union of Railway Men and the Associated Society of Locomotive Engineers and Firemen for an all-round increase of $1.25 for men of all grades. This was accompanied by a demand that in the poorly paid grades a minimum of $7.50 per week should be established. The Scottish miners put forward a demand for a standard daily wage of $1.75 for all coal getters; the extension of the eight-hour law to surface workers, a minimum wage of $1.25 for surface workers, exclusion of non-unionists from mines, and stricter enforcement of safety regulations under ground. The coal miners of South Yorkshire who engaged in a great fight for a minimum wage in 1912 and 1913 set up a demand for an increase in this minimum. Sir Edward Clark, the arbitrator, had fixed the minimum in 1912 at $1.66 per day. Advances in 1913, granted by the conciliation board, raised the minimum to $1.82 per day; but Sir Edward Clark's second award, in January, 1914, fixed the minimum at $1.78 per day. The mine operators contended that the latter should constitute the minimum, whereas the miners held that the 16-cent advance of 1913 should be added to this, making a minimum of $1.92 per day. Brewery workers in London demanded a minimum of $3.75 per week for women employees and $7.50 per week for adult men.

The general report of the British Friendly Societies showed that 680 trade unions were registered under the insurance scheme; they constituted a majority of the unions. These unions had a total of 2,597,772 members, an increase of more than 1,000,000 in 10 years. A large portion of this increase was due to the Social Insurance Act (see SOCIAL INSURANCE, *Great Britain*). Thirteen of the unions showed reserve funds of more than $500,000 each. Thus the Amalgamated Society of Engineers had total resources of $3,931,000; the Cotton Spinners, $2,503,000; Railway Servants, $1,895,000; Derbyshire miners, $1,220,000; Boiler-Makers, $1,113,000; Locomotive Engineers, $848,000; Yorkshire miners, $816,000; Durham miners, $796,000; the Boot and Shoe Operatives, $774,000.

GERMANY. The trade unions of Germany fall into three groups: the General Commission of Trade Unions, Christian Unions, and the Hirsch-Duncker Unions. At the beginning of 1914 the General Commission included 47 general unions with a total average membership of 2,548,763. This was an increase of 716,093 as compared with 1909. The number of unions has decreased, owing to amalgamation among kindred trades. The membership was distributed among the following trades: building, 436,061; metal, 580,093; textile, 138,079; transport, 254,236; mining, 101,908; clothing, 112,459; woodworking, 209,703; food, drink, and tobacco, 118,341; clay, glass, and stone, 75,907; paper, and leather, 74,877; printing, 102,245; other trades, 297,974. Female trade union members numbered 223,676 in 29 of the affiliated unions. The largest female membership was found in the textile workers, 54,846; metal workers, 27,971; and general factory workers, 26,376.

The total income of the 47 national unions in 1913 was $19,525,000, total expenditures were $17,835,000, and funds on hand, $20,969,000. Of the expenditures, $11,379,000 were for benefits; $800,000 for educational purposes; $2,420,000 for organizing and related expenses; and $3,235,000 for management. The principal items among benefits were the following: strike, lockout, and victimization benefits, $4,177,000; traveling and unemployment, $3,105,000; sick, $3,217,000.

The largest single union comprised in the General Commission includes the Metal Workers, which is the largest trade union in Europe. Its total membership, Jan. 1, 1914, was 544,934, a decrease of 16,613 during the year. This decrease was due to unsuccessful labor disputes, especially among the shipbuilders. During the year 1913 this union paid benefits amounting to $3,364,597. The largest items of benefits were for strike pay, loss of work through sickness, and loss of work through unemployment, these three items being somewhat equal and including 90 per cent of the total. Funds on hand at the end of 1913 were $4,416,000. Benefits were also paid for traveling and removal, funerals, legal protection, and relief in cases of need. Similar benefits are paid by the other large unions noted above.

The Hirsch-Duncker Unions comprised 106,618 members at the close of 1913. Their total income was $682,000; and expenditures in various benefits, $624,000. Funds at the close of the year amounted to $411,000.

The Christian Trade Unions comprised 324,785 members at the close of 1913. Their total income for the year was $1,709,000; and funds on hand, $2,305,000.

The ninth German Trade Union Congress was held in Munich, June 22–27, 1914. Delegates numbering 458 were present, including those from the Coöperative Federation of Germany, the Social Democratic party, and trade unions of Austria, Great Britain, Switzerland, and Scandinavian countries. This Congress includes the

General Commission of Trade Unions above noted. In addition to the above statistics it was reported that the trade union and coöperative insurance company, "Volksfürsorge," had issued 74,746 insurance policies in the first months of its existence, July 7 to Dec. 31, 1913, representing $3,154,000 insurance. Much attention was given to the methods of settlement of jurisdictional disputes. It was agreed to render mutual assistance in strikes and lockouts. After any union, engaged in a trade dispute, has levied extra contributions upon itself it may appeal to the general committee of all the affiliated unions. This committee is authorized, then, to exact from all the unions of the General Commission, contributions for the particular union involved. Other subjects dealt with were: the organization of women workers; the insurance society above referred to; the legal protection of strike breakers; collective agreements; rising prices and their effect upon the standard of living; unemployment.

Collective Agreements. According to a report of the Imperial Statistical Office at Berlin there were in existence 10,739 collective trade agreements, affecting 159,930 establishments, with 1,574,000 employees, in Germany, at the close of 1912. Agreements were found in greatest number in the building trades, 2466; food and provisions, 2167; metal working, 1291; and wood working, 1264; large numbers were found also in stone and clay working, textiles, leather, clothing, cleaning, printing, commercial pursuits, traffic, restaurants, and public houses. The building trades comprised 37.9 per cent of all workers under trade agreements; metal working, 12.6 per cent; woodworking, 10 per cent; and clothing, food, and provisions, slightly smaller percentages. A considerable majority of the workers affected by these trade agreements belonged to trade unions. In all but three of them the agreements were made by the associated workers, rather than by individual workers. On the other hand, employers made agreements for the most part individually, but those trade agreements made by employers' associations comprised the majority of all workers affected.

TRANSMISSION OF ELECTRIC POWER. See Electric Power, Transmission of.

TRANSVAAL. One of the four original provinces of the Union of South Africa. Of the total population in 1911 (1,686,212), 971,555 were males and 714,657 were females. Europeans numbered 420,562, natives, 1,219,845, other colored races, 45,805. The provincial capital is Pretoria, which is also the capital of the union. It had 29,618 inhabitants in 1911. Johannesburg, the largest town and the centre of the Witwatersrand gold hills, had 119,953 white, and 117,151 colored inhabitants in 1911. The total number of schools in 1911 was 711, with an enrollment of 59,112, and an average attendance of 52,577. There were 14,741 pupils in 251 native schools.

Agriculture and grazing are extensively carried on. There were, in 1911, in the province, 1,339,298 cattle, 89,160 horses, 3,415,250 sheep, 1,771,720 goats, 302,882 swine, 25,275 mules, 106,048 asses, 5441 ostriches. The wheat output for 1911 was 3,310,613 muids (of 200 pounds); tobacco, 7,701,774 pounds; potatoes, 411,150 muids (150 pounds); barley, 12,381 muids (160 pounds); oats, 155,067 muids (150 pounds). J. Rissik was Provincial Administrator in 1914. See South Africa, Union of, for area, population, and other statistical details.

TRANSYLVANIA. See Shipbuilding.

TREATIES. See International Arbitration and Peace, section *Bryan-Wilson Treaties* and *passim*.

TREITSCHEKE. See Literature, English and American, *War Literature*.

TRENGGANU. A British possession on the eastern side of the Malay Peninsula, north of Pahang; a native State under British protection. Estimated area, 6000 square miles. The population, census of March, 1911, included 149,379 Malays, 4169 Chinese, 10 whites, 61 Indians, 454 of other races—a total of 154,073. The capital and chief town is Kuala Trengganu, with 13,991 inhabitants. The value of the imports from Singapore, in 1912, was S.S.$1,053,911; of which rice, S.S.$651,000; cotton piece goods, S.S.$153,710; opium, S.S.$46,160; sugar, S.S.$41,554. Exports to Singapore, S.S.$1,513,941; of which dried and salted fish, S.S.$571,718; tin ore, S.S.$485,201; paddy, S.S.$198,285; copra, S.S.$240,388; black pepper, S.S.$160,351; wolfram ore, S.S.$53,384. The reigning Sultan is Sir Zainal Abdin ibni Almerhum Ahmad. The British Agent in 1914 was W. D. Scott (E. A. Dickson, acting).

TRICHINOSIS. See Veterinary Medicine.

TRINIDAD AND TOBAGO. Two islands of the West Indies which together form a British colony. Area of Trinidad, 1754 square miles; of Tobago, 114 square miles. Total population, in 1911, 333,552. Coolie immigration from India is under government control. Number introduced, in 1912–13, 2370. About 445,703 acres are under cultivation. The soil is fertile, and produced for export, in 1912, 663,305 hundredweights of sugar, 370,765 hundredweights of cacao, and 16,305,108 coconuts. Other exports are molasses, rum, bitters, timber, manjack, and asphalt. The mineral wealth is considerable. There is a railway from Port of Spain, the capital, to Arima, 16 miles. The Couva line covers 24 miles; the extension to Claxton's Bay is 4½ miles; that to San Fernando, 7 miles; that to Prince's Town and Sangre Grande, 12 miles; and to Tabaquite, 15 miles. The imports for 1912 were valued at £4,682,325, and the exports at £4,472,577. Customs receipts, 1912, £444,706. Revenue, 1912–13, £932,513; expenditure, £947,221. Tonnage entered and cleared, 3,526,354, of which 2,327,076 tons British. The debt stood, March 31, 1912, at £1,045,092. Governor and commander-in-chief, 1914, Sir George Ruthven Le Hunte.

TRINITY COLLEGE. An institution for higher education, founded in 1823 at Hartford, Conn. There were in the college in the autumn of 1914, 248 students and the faculty numbered 27. There were no notable changes in the faculty during the year. The library and administration building, gift of J. P. Morgan, was completed. The productive funds of the college amounted at the end of the collegiate year 1913–14 to $1,224,558, and the income was $80,575. The library contains 71,990 books and 46,699 pamphlets. The president is F. L. Luther, LL.D.

TRIPOLI. A country in Africa bordering on the Mediterranean, between Tunis and Algeria on the west and Egypt on the east; the Sahara lies to the southeast and south. As a result of the Turco-Italian War, Tripoli, hitherto a vilayet of the Ottoman Empire, was proclaimed, together with Cyrenaica, a province of the kingdom of Italy. Together, under the name Libya, they cover an area estimated at 405,800 square miles, with about 1,000,000 inhabitants. Tripoli, with 50,000 inhabitants, is the capital of Tripoli; Bengazi, with 30,000 inhabitants, of Cyrenaica (or Bengazi, or Barca)—both Mediterranean ports. There is a Governor for each of the two divisions.

HISTORY. After the victory of Dec. 24, 1913, when the Italian forces at Maharuga and Gurda defeated a body of some 2000 Arab riflemen and killed their leader, Mahomed Ben Abdullah, the Italian military operations were vigorously pushed forward for the pacification of Libya. On February 28, General Ameglio carried a fortified camp of the Arabs at Shleidema (south of Bengasi), killing over 200 natives. On March 3, Colonel Miani occupied Murzuk, the capital of the Fezzan. At Zuetina, near Ghedabia, a sharp engagement was fought, in which over 300 were killed; the effect of the battle was to weaken very much the resistance of the Mogarba Senussi, who controlled Zuetina and Ghedabia, the two important caravan centres in Southern Cyrenaica. Rumors of peace negotiations between the Senussi tribesmen and Italy took root in the visit of Sheikh Idris El Senussi to Alexandria, ostensibly en route for Medina. As Idris was the cousin of the head of the Senussi sect, Grand Sheikh el Senussi, it was believed that he was endeavoring to effect an arrangement whereby the Grand Sheikh would become the Sultan's religious representative in Tripoli and obtain recognition from Italy as an almost independent tributary prince. Later, when the war broke out in Europe, reports were persistently circulated to the effect that German emissaries, and then that Turks, were stirring up the Senussi to wage a holy war against Italy. The truth as to the condition of Libya at the close of the year was not easy to ascertain from conflicting dispatches, but at least one fact was certain, that the Italian government had given proof of its apprehensions by sending large reënforcements to the garrison in Libya.

TROPICAL DISEASES. Infant mortality in the Philippine Islands presented certain anomalous features which were calculated to overturn the preconceived ideas of those accustomed to conditions in the United States or Europe. Infant mortality is greater in Manila than in any city in which records are kept. Faulty nutrition is one of the most prominent of many factors contributing to this high mortality. In temperate countries the death rate of infants fed on cow's milk is from 5 to 10 times as great as among those fed on mother's milk, but in the Philippines the contrary is the case, the mortality there among breast-fed children being higher than among children artificially nourished. The ultimate explanation seems to lie in the deficient quantity and quality of the mother's milk, the women being under nourished, either as a result of faulty diet or the ravages of diseases. To add to the difficulty, at present, clean, fresh, raw cow's milk is not obtainable in any considerable quantity in the Philippine Islands, and the prospect for producing it seems remote. The milk now used is obtained from carabaos and goats, and most of it is dangerous to health, no matter how used. The great problem with respect to infant feeding is the introduction of suitable substitutes for fresh milk, which must be inexpensive.

Industrial sanitation in the tropics has been stimulated by the demonstration of it during the building of the Panama Canal. That private enterprises can obtain equally favorable results is shown by the experience of the United Fruit Company. The reports of its medical department, which supervises plantations in Panama, Cuba, Central and South America, and cares for over 65,000 employees, shows some remarkable results. In the Panama division, for 1912, the death rate for the white employees was 12 per thousand; that of the black, 11.36 per thousand. In 1913 the white mortality was 3.33; the colored 7.7. This extremely low mortality rate was not obtained in the other divisions of the company's plantations, but the health of the employees has been kept at a high average. The result has been obtained by perfect sanitary organization, building suitable houses and hospitals, drainage, mosquito elimination, and periodic visits to all the plantations by physicians. The personnel of the medical organization has been drawn from the best medical schools in the United States.

A rare animal parasite of man was described in 1914. This was a parasitic worm of the genus *Œsophagostoma*, a worm which resembles in certain of its features the hookworm. The parasite produces cysts or tumors, generally in the large intestine, rarely in the small, which contains the immature adult worm. At maturity the cyst ruptures and the adult worm escapes into the lumen of the intestine. These ruptured cysts may be invaded by intestinal bacteria, with resultant ulceration, and sometimes perforation of the intestine. The study of this parasite, first described by Brumpt in 1905, was undertaken by the Bureau of Science at Manila.

Dr. Fantham described a new disease of the Sudan, a form of bronchitis due to a spirochete occurring in the respiratory passages of man. Very little is known of this peculiar organism, but natives and Europeans suffer from the disease, especially after the rainy season. Relapses are not uncommon, but the malady responds to treatment. Epidemic centres have already been found at Khartum, Omdurman, Kodok, and other widely separated places.

The Imperial Bureau of Entomology, started by the British Colonial Office, was doing excellent work in this branch of science. During the year 1914 it began to publish its *Review on Applied Entomology*, issued monthly in two divisions, one agricultural and veterinary, the other dealing with human subjects. This review is an abstract of papers published in many languages, including Russian and Japanese. The bureau also collected a complete set of laws and regulations against injurious insects in the British dominions and colonies. These were to be correlated and summarized. Some anxiety was felt with regard to the spread of yellow fever after the opening of the Panama Canal. Considerable traffic will be deflected from the yellow-fever-haunted American countries to the west of Asia; and should the *Stegomyia fasciata* be brought with it, an appalling outbreak of yellow fever might occur in India. The bureau was investigating the question whether the *Stegomyia scutellaris*, a mosquito, widely distributed, especially in Africa, carries yellow fever. The bureau secured the services of Mr. W. F. Fiske, the well-known American entomologist, to carry out at the expense of the Nyassaland government, a thorough investigation into the bionomics of the tsetse fly, *Glossina morsitans*, which conveys sleeping sickness. The *Bulletin of Entomological Research*, which the bureau started at its foundation, contains records of original work only.

TROTOL GELATIN. See CHEMISTRY, INDUSTRIAL.

TROTTING. See RACING.

TRUST COMPANIES. See LOAN AND TRUST COMPANIES.

TRUSTS. In accordance with the administration programme, the enactment of the law reorganizing the banking and currency systems of the country, late in 1913, was at once followed by concentrated attention on a reasonable solution of the trust problem. On January 20, President Wilson delivered a message to Congress setting forth a programme of trust legislation. This included the prohibition of interlocking directorates; supervision of the issue of railway securities by the Interstate Commerce Commission; definition of acts deemed in "restraint of trade"; creation of a trade commission; fixing of penalties for those individuals guilty of restraint of trade; prohibition of holding companies; possible limitation of the voting power of persons holding shares in several corporations; and the establishment of the right of individuals to bring suits for damages against combinations found guilty of violating the anti-trust law. The message was mild in tone and assured the country of a desire to remove the evils of private monopoly with as little disturbance as possible.

The administration bills, four in number, were introduced by Representative Clayton of the House Judiciary Committee in January. These dealt with definitions of illegal acts; the granting of relief to persons injured by the operations of trusts; the checking of interlocking directorates; and the creation of an Interstate Trade Commission. A fifth bill relating to holding companies was afterwards introduced. Hearings were held in February, but they attracted little public interest. Thereafter various other bills were introduced in both House and Senate and various compromises and modifications were made in them with a view to harmonizing the ideas of leaders in Congress, the President, and his advisers. After prolonged discussion there were passed, in October, the Covington Trade Commission Bill and the Clayton Bill. These had been passed in a somewhat different form by the House in June, but Senate modifications delayed final passage several months.

CLAYTON BILL. On October 15 the new "Federal Anti-Trust Act," known as the Clayton Bill, was passed, and signed by the President. This was at the last moment vigorously opposed by certain Democrats on the ground that the force had been taken out of it. It was designed primarily to supplement the Sherman Anti-Trust Act by defining more explicitly legal and illegal actions. In its final form it was an omnibus measure in that it added, to sections for curbing trust activities, other sections for relieving labor organizations from anti-trust legislation. To the term "restraint of trade" which had been in use for many years, it added the phrase, "to lessen competition." The new law prohibits any firm from making different prices between purchasers of its commodities, whenever such discrimination may lessen competition or tend to create monopoly. Numerous exceptions, however, are made on account of quantity or quality, differences in cost of selling or transportation, or the necessity of meeting competition. Obviously these numerous exceptions greatly weakened this section against price cutting. Another section makes it unlawful for a manufacturer to sell his goods to a dealer under conditions requiring such dealer not to handle the products of any other manufacturer; or factor's agreements are prohibited. Moreover, manufacturers of patented articles cannot require use of unpatented articles therewith, as in the mimeograph case. Decrees in government trust suits shall constitute prima facie evidence for the purposes of private suits for damages under the anti-trust laws. Moreover in the case of private suits the statute of limitations shall begin to run only from the date that decree is entered in the government suit. Holding companies are prohibited under a section which forbids one corporation holding the stock of another where the effect is "to substantially lessen competition" or to tend to create a monopoly. One corporation, however, may hold the stock of another solely for investment. Interlocking directorates are aimed at by provision prohibiting a person from being an officer or director of more than one bank, or of two or more large corporations which are competitors. Moreover common carriers may not deal with corporations having, in common, directors or officers with themselves, except by competitive bidding. The Federal Trade Commission noted below is entrusted with the execution of the provisions against price discrimination, exclusive trade agreement, holding companies, and interlocking directorates. Violation of penal sections of any anti-trust law constitutes an offense, not only on the part of the corporation, but also of the individual director, officer, or agent authorizing the act in question. The penalty for any individual offender convicted of such offense is fixed at a fine not exceeding $5000, or imprisonment not exceeding one year, or both. See TRADE UNIONS.

TRADE COMMISSION ACT. This act created a Commission of five members to be appointed by the President with the advice and consent of the Senate, for terms of seven years each. Not more than three may be of any one political party. They will receive salaries of $10,000 each, and the Commission's secretary will receive $5000. This Commission will take over the Bureau of Corporations which was in fact expected to serve as an effective nucleus for the organization of the activities of the Commission. Investigations already begun by the Bureau were expected to be continued. Among these investigations, according to Secretary Redfield's annual report, those covering lumber, tobacco, agricultural implements, State corporation taxes, fertilizers, and petroleum remained uncompleted. Moreover, the Bureau contemplated inquiries into the economic character and effects of resale price maintenance, the efficiency of the trusts, and similar problems. The Trade Commission Act declared unfair methods of competition in commerce to be unlawful. Apart from definitions in the Anti-Trust Act above noted, the determination of what constitutes unfair methods was left to the Commission. This is similar to the power of the Interstate Commerce Commission to determine what constitute reasonable and unreasonable railroad rates. The Commission whenever convinced that public interest requires its interference in cases of unfair competition may order a hearing; if the person or firm involved does not respond, the Commission may apply to the Circuit Court of Appeals for enforcement. Moreover, this Court is given exclusive jurisdiction and power of review as to the law, but not as to facts with respect to orders of the Commission. The latter has complete power to investigate all interstate corporations except common carriers and banks; it has access to all books and records, and may compel the giving of testimony. The Commission may require annual or special reports from any corporation or class of corporations. Penalties are imposed for failure to make reports. Thus the law is designed to secure the salutary effects of the greatly increased publicity. The Commission may publish information obtained by it, except trade secrets and the names of customers. On account of these large powers of inquiry the prohibition of unfair competition, of price discrimination, and of restrictive sales and leases is possible only through the Commission. The President, either House of Congress, or the Attorney-General may request the Commission to make investigations; moreover, the Attorney-General may request it to recommend the form of dissolution of combinations. A court may refer any suit to the Commission as a Master Chancery to ascertain and report the appropriate form of decree. This provision is expected to secure a more intelligent solution of the problem of reorganizing and dissolving large combinations, than was secured in the Standard Oil and Tobacco Trust dissolution decrees. The Commission may report to Congress, from time to time, recommendations for further legislation regarding corporations, combinations, and trade practices. The creation of such a Commission had long been favored by leading students of the trust problem. Inquiries sent to boards of trade throughout the country in 1914 showed an almost unanimous approval of the idea. This law was generally believed to be a great step forward in the organization and regulation of American industrial life.

Shipping Trusts. The House Committee on Merchant Marines, after two years of investigation, submitted in February a 14-volume report on domestic and foreign shipping of the United States. The Committee found that both kinds of shipping are controlled by agreements, pools, and conferences to such an extent that the disruption of these combinations would cripple the trade. It therefore recommended supervision and regulation by the Interstate Commerce Commission instead of dissolution. The Committee found that shipping lines on nearly every route operate under agreements designed to restrain competition and that these agreements result in advantages for both shipper and carrier. The incidental evils as to rates, rebates, and discriminations could be eliminated by supervision. Eighty agreements in foreign trade and 37 groups of bulk carriers in the domestic trades on the Lakes were found. The Committee did not believe that open competition could be restored for any length of time. It suggested that all agreements be filed with the Interstate Commerce Commission which should have authority to regulate rates and enforce fair treatment, and which should be enlarged if necessary to meet these new demands.

Prosecutions. In his annual report for 1914 the Attorney-General stated that between July 1, 1913, and Dec. 7, 1914, 16 cases under the Anti-Trust Law had been determined, 8 civil and 8 criminal. There were pending at the latter date 47 cases, 32 civil and 15 criminal. Of these 15 cases, 6 civil and 9 criminal, had been instituted during the Wilson administration.

One of the most important cases determined was that of monopolizing of the transportation facilities of New England by the New York, New Haven, and Hartford Railroad Company. The Department of Justice was preparing to make an attack upon this situation when, near the close of 1913, the new management of the Railroad Company requested that negotiations be entered into with a view to settlement of the monopoly question by mutual agreement. A plan of voluntary dissolution was finally agreed upon and entered in a final decree of the District Court on Oct. 17, 1914. This decree provided for the cancellation of the agreement between the New Haven Company and the New York Central for the joint operation of the Boston and Albany Railroad; for the relinquishment by the New Haven Company of its interests in trolley lines, and also of its interests in steamship lines between New England ports and other Atlantic ports. The question whether the steamboat lines on Long Island Sound should also be disposed of was to be submitted to the Interstate Commerce Commission.

Another important case involved numerous complaints that the American Telephone and Telegraph Company, known as the Bell System, was monopolizing means of communication by wire. The purpose of the Company to do this had been frankly admitted in its annual report for 1910. Moreover, it had achieved control of more than half of all the telephones of the country and through stock ownership dominated the principal telegraph company, the Western Union. In July, 1913, suit was instituted at Portland, Ore., charging the Bell Company with combining to monopolize telephone lines in Oregon, Washington, and Idaho. The officers of the Bell System, however, expressed a desire to bring their organization methods into harmony with the anti-trust laws. At the suggestion of the Attorney-General they agreed to the following, which was confirmed by court decree, March 26: To dispose of all Western Union telegraph stock; not to make any further acquisition of competing telephone systems; and to connect their long distance wires with the local exchanges of independent companies. This agreement was not construed to prevent the combination of two telephone companies competing in the same city or territory. Moreover, coöperation between the telephone and telegraph companies was not prohibited, but only their consolidation under one management.

The National Wholesale Jewelers Association on Jan. 30, 1914, was enjoined by the District Court of New York City from further conspiring to prevent manufacturers of jewelry from selling direct to retail dealers. A combination between the J. & P. Coats Co., Ltd., and affiliated corporations and the American Thread Company and affiliated corporations was dissolved by a decree of the District Court of New Jersey on June 2, 1914. These concerns were also enjoined from engaging in certain unfair trade practices against independent thread manufacturers. The Attorney General believed this result would institute competition between these great thread producers and, moreover, permit independent manufacturers to enter the field. On June 22, 1914, the dissolution of the Eastern States' Retail Lumber Dealers' Association was affirmed by the Supreme Court. This Association was a combination of retail lumber dealers to prevent wholesalers from selling directly to consumers. The Elgin Board of Trade et al. was enjoined on April 27, by the District Court at Chicago, from continuing practices whereby the prices of butter throughout large areas were fixed arbitrarily. Similarly, the Chicago Butter and Egg Board et al. were, on October 12, enjoined by the same court from arbitrarily fixing and controlling the prices paid for butter and eggs throughout a large territory. The International Brotherhood of Electrical Engineers were permanently enjoined, on February 27, by the District Court of Chicago, from interfering with the interstate business of the Postal Telegraph Company. The Alaska Transportation Companies, the North British Wharves and Trading Company, and the Pacific and Arctic Railway and Navigation Company in February plead guilty respectively to conspiring to monopolize the wharf facilities at Skagway and to conspiring to monopolize steamship transportation between Puget Sound and Alaskan ports. They were fined a total of $28,000. The case against officers and members of the United Mine Workers of America, instituted by the United States District Attorney in West Virginia without authority, was *nolle prossed* on June 20. The American Naval Stores Company, convicted in the District Court and fined $17,500, while two individual defendants were sentenced to three months in jail, secured a re-trial by means of a writ from the Supreme Court. This re-trial in June resulted in a verdict of not guilty. The American Wringer Company et al., charged with conspiring to fix the price of clothes wringers, entered a plea of *nolo contendere* on November 13 and were fined $6000.

Cases Still Pending. The following includes a summary of cases begun before July 1, 1913, but still pending on Dec. 7, 1914. The case against the United States Steel Corporation was argued before the Circuit Judges in New Jersey in October. The case against the International Harvester Company, argued in November, 1913, was decided in favor of the government on August 12. In the decree it was insisted that the parts into which the combination might dissolve should be separately owned and controlled by different sets of stockholders. Appeal was taken by the company to the Supreme Court. The Terminal Railway Association of St. Louis received a favorable decree from the Circuit Court on March 2. Appeal was taken to the Supreme Court by the government, the case being argued in October. Plans for carrying out the decree of Feb. 11, 1913, dissolving the Great Lakes Towing Company, had not yet been fully agreed upon. The taking of testimony against the American Sugar Refinery Company had been completed and the case was being prepared for trial. The Transatlantic Steamship Pool case was argued in April and a decision unfavorable to the government was rendered in October. Appeal was taken to the Supreme Court. Testimony taking had been completed in the suit against the steamship lines to Brazilian ports (Prince Line et al.); so also in the suit against the American-Asiatic Steamship Company et al., operating lines to Far Eastern ports. There were several lumber cases similar to the one above mentioned being prepared for trial. The Soft Coal case, or the several suits against the soft coal-carrying road in Ohio and West Virginia was decided favorable to the government in December, 1912. Further decrees granting relief were given Nov. 10, 1913, and March 14, 1914. The civil suit against the United Shoe Machinery Company at Boston was completed in June, 1914, but decision had not been rendered. The criminal suit against the same defendants had been deferred. The appeal of the National Cash Register Company and individual defendants was argued before the Circuit Court of Appeals in October and decision was awaited. This was a criminal suit in which total fines of $135,000 and jail sentences of nine months to one year had been imposed. A civil suit against the same defendants was awaiting the final disposition of the criminal suit. The Keystone Watch Case Company et al. were defendants in a case argued in June in which decision had not yet been rendered. The Associated Bill Posters and Distributors consented to a decree dissolving their combination. The Motion Picture Patents Company case was argued in November. The case against Wm. G. Geer et al., known as the paper-board case, was being prepared for trial. The suit against the Master Horse-Shoers' National Protective Association of America was not contested by some of the defendants and the demurrers of the others were overruled. The form of decree was under consideration. The criminal suit, begun in December, 1912, in the Federal District Court at New York City, against Charles S. Mellin and 20 other directors and officers of the New York, New Haven, and Hartford Railroad Company, charged with conspiracy to prevent construction by the Grand Trunk Railway Company of certain lines of railroad, and otherwise monopolize transportation in New England, was awaiting trial. Pleas of abatement by Wm. Rockefeller and 8 other defendants were overruled. In December, pleas of immunity were entered by 8 others on ground of previous testimony. The Kellogg Toasted Corn Flakes Company had moved that the suit against it be dismissed; this was argued in July and decision was awaited. The suit against the United Shoe Machinery Company of New Jersey was deferred, pending the outcome of a civil suit against the same company in Massachusetts Other cases, begun before July 1, 1913, and still pending, were those against the following defendants: Board of Trade of the City of Chicago; the Cleveland Stone Company; the Lackawanna Railroad Company and the Lackawanna Coal Company, in which a decision adverse to the government had been appealed to the Supreme Court; the McCaskey Register Company; the Corn Products Refining Company; Terminal Railroad Association of St. Louis; Eastman Kodak Company; and the Quaker Oats Company.

The following cases still pending had been instituted since July 1, 1913: The Reading Company and affiliated corporations were charged in September, 1913, with restraining and monopolizing the trade in anthracite coal. The case was argued in the Circuit Court in June and decision was awaited. A somewhat similar suit against the Lehigh Valley Railroad Company and other railroad and coal companies was begun in March, 1914, they being charged with monopolizing the production, transportation, and sale of coal from a specified region. Moreover, the railroad company was charged with transporting coal, in which it had an interest, in violation of the commodity clause of the Interstate Commerce Act. Decision was rendered by Judge Hough of the District Court December 21. He dismissed the suit on the ground that no monopoly or any attempt to monopolize was shown. The suit begun in November, 1913, against the American Can Company et al., charged with monopolizing the manufacture of tin cans, was in process, government testimony having been concluded. Cases begun in December against John P. White et al. and Frank J. Hayes et al. in the District of Columbia alleging a monopoly in mine labor in one case and, in the other, a conspiracy by workers to interfere with coal mining and transportation, were not prosecuted. In February the government brought suit in Utah against the Southern Pacific Company, Central Pacific Railway et al. to compel the former to relinquish its control of the latter on the ground that they were natural competitors. The taking of government testimony had been completed. A suit against Knaver et al., in Iowa, charging conspiracy to restrain trade in plumbing supplies, was set for trial December 8. Other cases, indictments for which had been returned in the later months of 1914, were as follows: The Booth Fisheries Company et al. were charged with combining to fix the price of fish in certain sections of Washington; the Western Cantaloupe Exchange et al. were charged with monopolizing interstate trade in cantaloupes; Collins et al., or 31 commission merchants, were charged with arbitrarily fixing the prices of country produce sold in the District of Columbia; McCoach et al., or 33 master plumbers and retail dealers in plumbing supplies, were charged with combination in Pennsylvania; Irving et al., or 14 master plumbers and retail dealers, were similarly accused in Utah.

TSETSE FLY. See SLEEPING SICKNESS; TROPICAL DISEASES.

TSINGTAO. See CHINA, *History,* under *China and the War;* and WAR OF THE NATIONS.

TUBERCULIN. Kutschera used tuberculin by what he terms the percutaneous method. He has the patient drop the tuberculin on his own skin and rub it in with his thumb until it has all disappeared. This method has proved particularly practical and effectual in some convents in his charge where 600 nuns have been taking this tuberculin treatment. It has demonstrated its usefulness in protecting against the flaring up of latent tuberculosis, but he advocates the more potent subcutaneous technic when the disease is already manifest. The percutaneous method is especially adapted for members of families exposed to tuberculosis, for large institutions, etc., as it is so simple and inexpensive that it can be applied in a wholesale manner. He begins with one drop of a 1:25 dilution of the tuberculin once a week. The dose is increased by one drop each week for four weeks. When the four drop dose has been reached he changes to a 1:5 dilution and so on, finally using one drop of pure tuberculin up to four drops. The treatment must be kept up for two years after the last manifestations have subsided. The inunction is made at a different point each time. Once a month or three months is generally often enough for medical supervision. See EPILEPSY; TUBERCULOSIS.

TUBERCULOSIS. The year 1914 was marked by a recrudescence of the old operation of induced pneumothorax as a treatment for apical tuberculosis. The operation consists in puncturing the pleural cavity at its apex and injecting nitrogen gas with the aim of securing collapse and immobilization of the affected portion of the lung. The first operation of this kind is credited to James Carson, an English physiologist, who inflated the pleural sac of animals, and pointed out its probable value in pulmonary disease, but did not use it clinically. In 1889, Forlanini, an Italian physician, advised that pneumothorax be induced artificially, after he had noted a number of spontaneous cures by intercurrent pneumothorax. Ten years later Forlanini began to employ it, making his report in 1894. Meanwhile Murphy, of Chicago, devised and applied the same treatment in five cases, in all of which he reported improvement, in 1898. Since 1898 a number of clinicians both in Europe and America have tried out the method with varying fortune. Various gases have been tried, among them oxygen, carbon dioxide, and nitrogen. The latter being more slowly absorbed, as well as inert and non-irritating, is most suitable, and is therefore injected after it has been sterilized and filtered. The apparatus consists essentially of a rather dull hollow needle, which is thrust in between the layers of the pleura, a reservoir for the gas, and a manometer to determine the degree of pressure, which is indicated on a graduated scale. When sufficient pressure has been attained the needle is withdrawn and the operation is completed. The procedure must be repeated as frequently as is necessary to maintain collapse of the lung. Repetition may be required in from 2 or 3 days up to a month. Improvement may be looked for in 6 months, but the lung should be kept collapsed for a year, or even longer. As the gas is absorbed the lungs reëxpand. Certain accidents may be expected. Pain occurring after injection, due probably to tension on pleuritic adhesions, is sometimes unavoidable, but does not last long. Subcutaneous emphysema sometimes takes place from coughing, straining, etc., or inducing too much pressure, and is due to leakage from the pleura back through the puncture into the subcutaneous tissues. When both lungs are affected bleeding from the opposite lung may rarely supervene. Puncture of the lung has no evil result, although it is to be avoided. Displacement of the heart and aorta, dyspnœa, gas embolism and "pleural reflex," the two latter sometimes causing death, are enumerated among the possible accidents. Certain authors hold that pleural reflex is nothing more than embolism. Brauer examined post-mortem the brain under water and demonstrated bubbles in the blood-vessels. The symptoms of air or gas embolism are fainting, pallor, convulsions, temporary or permanent paralysis, and occasionally death. There is an international society called "Pneumothorax Artificialis," composed of physicians practicing this procedure, and a publication entitled *Revista delle Publicazione sul Pneumothorace Terapeutica*, edited by Professor Forlanini. The treasurer of the society is Professor Saugmen of the Vejlefjord Sanatorium, Daugaard, Denmark.

The final report of the government investigators of the Friedmann "remedy" was made public in October, 1914. It states that the cases showing improvement or cure, as observed by the physicians of the United States Public Health Service, were comparatively few. The government report was, therefore, in line with other reports coming from scientific sources in America and Europe and refutes Friedmann's claims to the discovery of a specific cure for tuberculosis. The report also disproves the claim that the inoculation of persons and animals with his organism is without harmful possibilities. An extensive series of animal experiments was made to determine whether or not the treatment was entirely harmless; 180 guinea-pigs, 30 rabbits, 16 monkeys, and 8 tortoises were used. The animals were weighed weekly and the temperatures of some were taken daily or twice daily. One monkey died after an inoculation with the Friedmann bacillus, showing tubercular lesions in the liver and spleen. The monkey was proved to be free of tuberculosis before inoculation. In a few instances the animals inoculated were apparently somewhat resistant to infection, but all showed tuberculosis at autopsy. Neither curative nor protective action against natural or inoculation tuberculosis was shown in monkeys. Acid-fast organisms were repeatedly found in previously healthy guinea-pigs over 100 days after treatment with the Friedmann organism. Later, the material used by Dr. Friedmann for the treatment of human beings was found to be at times contaminated with pus organisms. (Consult *Hygiene Bulletin*, *99*, "On the Friedmann Treatment of Tuberculosis," Superintendent of Documents, Washington, D. C.). An editorial writer in Germany, discussing the views expressed at four meetings of the Berlin and Vienna Medical Societies, declares that never in the history of medicine has there been such a unanimous verdict of repudiation of an alleged curative measure as is the case with Friedmann's "remedy."

The relation of the foreign-born population to the tuberculosis problem is discussed by Dr. Rathbun, physician in charge of the Otisville Sanatorium, who calls attention to the fact that out of 1,197,892 immigrants admitted to this country at Ellis Island, New York, during the year 1913, only 38 were debarred on account of having tuberculosis. This represents but a small fraction of the immigrants actually tuberculous. The hospital and sanatorium figures tell a very different story. At the Bedford Hills Sanatorium 84 per cent of the patients are foreign born and most of them aliens; at the Metropolitan Hospital 51 per cent are foreign born and 25 per cent of these aliens; at the Riverside Hospital 45 per cent, at Otisville 42 per cent, and at the Seton Hospital 39 per cent are foreign born. As the population of New York City includes 40 per cent of foreign born people, the proportion of such patients in these institutions is considerably more than it should be. Dr. Rathbun suggests that the Federal government should appoint a committee to investigate this situation and to outline a more thorough system of examination. It cannot be considered proven, however, that all these immigrants enter the country with the disease. It is possible that under the stress of new economic conditions and change of climate, as in the case of Italians, the disease is developed after arrival. See EPILEPSY; HOSPITALS; TUBERCULIN.

TUBERCULOSIS IN CATTLE. See DAIRYING.

TUCKER, ALFRED ROBERT. Formerly Bishop of Uganda, died June 10, 1914. He was born in 1849 at Windermere, England, was educated at Christ Church, Oxford, and in 1882 was ordained to the Church of England ministry. After a three years' curacy at Clifton he became a colleague of the Rev. H. E. Fox, known for his great interest in the Church Missionary Society, and during this service he determined to volunteer for work in East Africa. His letter asking for information about the country received the answer that already his name had been mentioned for the new Bishopric of Eastern Equatorial Africa. He was consecrated on April 25, 1890, and left for Africa on the same evening. His diocese comprised the vast territories which now form the two British protectorates of East Africa and Uganda, as well as a portion of German East Africa. This was divided in 1899, and Bishop Tucker's sphere was limited to Uganda and the surrounding districts. Upon the death of the Bishop of Uganda, Bishop Tucker was appointed his successor and he was for the first time able to start an effective mission in that country. His episcopate lasted for 21 years, and during that time Christianity made astonishing progress throughout the country. In 1911 Bishop Tucker visited England to plead for financial aid in the rebuilding of the cathedral and other buildings belonging to the mission which had been destroyed by an earthquake. He was offered the canonry of Durham and accepted that office, which he held at the time of his death. In 1908 he published an account of his life and work in Africa entitled *Eighteen Years in Uganda and East Africa*, a remarkable record of missionary enterprise.

TUFTS COLLEGE. An institution of higher education, founded at Medford, Mass., in 1852. The enrollment in the several departments in the autumn of 1914 was 1223, and the faculty numbered 242. During the year the university received from the estate of Henry J. Braker, $354,034; from Thomas O. Hill, $10,000; and from Hannah S. Moulton, $10,149. The library contains about 72,000 volumes. During the year Hermon Carey Bumpus, Ph.D., Sc.D., LL.D., was elected president of the college.

TULANE UNIVERSITY OF LOUISIANA. An institution for higher learning, founded at New Orleans, in 1834. The total number of students enrolled in the several departments on Dec. 1, 1914, was 2510, and the faculty numbered 297. Professor Alcée Fortier, for many years head of the Department of Romance Languages, and dean of the Graduate Department, died Feb. 14, 1914, and Dr. Pierce Butler was elected dean of the Graduate School to succeed him. Dr. William Henry Seemann was elected dean of the School of Hygiene and Tropical Medicine, including Preventive Medicine, to succeed Dr. Creighton Wellman, resigned. Dr. Wallace Wood, Jr., was elected dean of the School of Dentistry, in place of Dr. Andrew G. Friedrichs, resigned. Mr. Charles Payne Fenner was elected dean of the College of Law in place of Prof. Dudley Odell McGovney, resigned. The School of Commerce and Business Administration was established in 1914 and Dr. Martin A. Aldrich was elected dean. The only gift of any note during the year was that of the United Fruit Company of $5000 for the support of the School of Hygiene and Tropical Medicine. The productive funds of the university at the close of the college year 1913–14 amounted to $4,297,987, and the income, from productive funds only, to $221,533. The library contained 68,700 volumes.

TUNGSTEN LAMPS. See ELECTRIC LIGHTING.

TUNIS. A French protectorate in northern Africa lying between Algeria and Tripoli. Area, 167,400 square kilometers, or 64,600 square miles, carrying a population estimated in 1911 at 1,929,003. The capital is Tunis, with 164,608 inhabitants, of whom 69,475 were Europeans.

Agriculture is the occupation of the people inhabiting the low regions, while in the mountainous regions are fertile valleys where grazing is carried on. The principal agricultural products are cereals, olives, and vines. Horses at the end of 1911 numbered 39,441, donkeys 80,951, mules and hinnies 13,289, camels 110,707, cattle 191,450, sheep 686,730, goats 468,828, swine 17,898. The area under principal crops and the yield for two years are given below, with the yield per hectare in 1912–13.

	Hectares		*Quintals*		*Qs.*
	1912-13	*1913-14*	*1912-13*	*1913-14*	*ha.*
Wheat	500,000	428,000	1,500,000	600,000	3.0
Barley	400,000	346,000	1,400,000	700,000	3.5
Oats	54,000	40,000	600,000	100,000	11.1
Corn	10,000	.....	20,000	......	2.0
Vines *	15,000	17,500	300,000	......	20.0

* Yield in hectoliters of wine.

By countries of origin and destination the trade for 1912 is given below in thousands of francs:

	Imps.	*Exps.*		*Imps.*	*Exps.*
France	80,265	67,778	Switz. ...	1,694	11
Algeria	17,835	7,738	Neth's ...	272	5,275
U. K.	14,544	13,752	Turkey ..	1,683	63
Germany ..	3,046	3,861	Egypt ...	477	453
Aus.-Hun. .	2,155	1,648	Tripoli ..	468	7,257
Belgium ...	3,282	9,057	U. S. ...	6,593	27
Italy	8,972	25,256	Brazil ...	1,589	5
Malta	256	2,379	Argentina	1,894	..
Spain	1,158	2,400	Other ...	8,915	5,818
Portugal ...	80	1,558			
Sweden ...	1,116	829	T'l 1912.	156,294	154,655
			T'l 1911.	121,688	143,681

The budget for 1913 estimated the revenue at 85,012,400 francs and the expenditure at 85,002,322 francs. Reigning Bey, Side-Mohammed-en Nasser. A French resident-general administers the country under the control of the foreign office.

TUNNELS. During 1914 two notable tunnels were under construction in America. The Chicago, Milwaukee, and St. Paul Railway was completing the 2½-mile Snoqualmie tunnel through the Cascade Mountains, making use of a novel type of construction, in which a bottom heading was driven, and the material as excavated from above was trapped into cars in the lower drift. The Canadian Pacific was driving a 5-mile tunnel through the Selkirk Mountains under Mt. McDonald, using a separate parallel or pioneer tunnel with cross cuts to the main tunnel at frequent intervals. The object of both these methods was to make possible driving the tunnel from several faces at the same time, and thus increase the speed of the work. These two projects represented the latest developments in railroad tunnel construction, where progress has been exceedingly rapid, due largely to the development of electric construction, and the installation of artificial ventilating systems. Current criticism of tunnel construction elicited the fact that the reduction of cost had not been as rapid as in other fields of railway work. Other railways reconsidered the construction of tunnels to cut down grades as well as for cut-off, and it was exceedingly probable that within a few years the American lines would consider further work in this direction.

SNOQUALMIE TUNNEL. This tunnel, 2½ miles in length, passing through the Cascade Mountains between Rockdale and Keschelus, about 60 miles east of Seattle, was approximately completed at the end of the year, the headings having met on August 4, and its use for regular service of trains was to be begun in 1915. The cost of the tunnel was figured at $2,000,000, but the saving in snow fighting alone on the former line was estimated at $175,000 a year. The material encountered in constructing this tunnel was varying kinds of rock with about 75 per cent of the distance through hard slate, the remainder being quartzite and granite. The new tunnel effected the saving of 443 feet of elevation and 1239 degrees of curvature.

ROGERS PASS TUNNEL. The Canadian Pacific Railway had under construction a 5-mile tunnel as an essential portion of the improvements of its main line where it crosses the summit of the Selkirk Range at Rogers Pass. There was being built an entirely new line for a distance of 18 miles with a marked improvement in grade, as the summit was to be 540 feet lower than the old line, together with a saving of 5 miles in distance, in addition to eliminating a stretch of line where snow was a great difficulty, and long stretches of snowsheds were required. There were nearly 5 miles of snowsheds in 13 miles, which would be reduced on the new lines to 4800 feet. The total curvature was also reduced and the maximum grade of 2.2 per cent was decreased from 46 to 29 miles. The tunnel is 26,400 feet long, and it was being built without intermediate shafts. For 1100 feet at each end the material is clay and bowlders and the remainder was expected to be solid rock, mica, schist, and quartzite. The maximum depth of rock above the tunnel was 5690 feet. The tunnel was to be 24 feet high and 29 feet wide, with a concrete lining through the softer materials. A pioneer heading was being driven 45 feet from the centre line of the main tunnel, with its head 10 feet above the subgrade of the latter. From this pioneer tunnel cross cuts were being made to the line of the main tunnel at convenient distances of 750 to 1000 feet apart, and drifts from these cross cuts were to be driven along the centre line of the main tunnel from which drilling and blasting could be carried on, while mucking was being done with air-operated shovels in the enlarged section of the main tunnel. The muck was being handled by 16-yard side-dump cars and compressed air locomotives. During the month of December the west end of the tunnel was driven 852 feet and the pioneer tunnel at the east end 544 feet. The centre heading of the west end of the main tunnel proper was driven 686 feet and the east end 523 feet, and work was being started on the enlargement of the centre heading in the east end to the full section. It was the intention to operate the trains by electricity after the tunnel was completed.

New York Subway Tunnels. In New York City the East River tunnels of the New York Rapid Transit Lines were put under construction, being two pairs of tunnels consisting of cast iron tubes of essentially the same type that had been used in other parts of the subway system. The length of the southerly pair of tubes was essentially 4090 feet and the northerly 3799 feet, the former running from Whitehall Street, Manhattan, to the foot of Montague Street, Brooklyn, and the northerly pair from Old Slip, Manhattan, to the foot of Clark Street, Brooklyn. (See Rapid Transit.) The excavation was to be under pneumatic pressure, and it was hoped that the United States government would remove the Coenties Reef overlying the tunnel at the Manhattan end as this impediment to navigation could be removed only with great difficulty and danger after the completion of the tunnel. In constructing the Harlem River tunnel of the Lexington Avenue Subway the same plan of construction was followed as in building the Michigan Central tunnel under the Detroit River several years previously, namely, of building successively sections of steel tubes somewhat larger in diameter than the completed tunnel, and then sinking them in position in a trench dredged along the line and filling above, around, and below the steel tubes with concrete, then pumping the water from the interior of the tubes and adding the concrete lining. The last section of the Harlem River tunnel was successfully sunk in September. A main advantage of this process was that the tunnel could be placed so near the surface of the river bed, in this particular case the top of the structure being only 7 feet lower than the original river bed.

Allegheny Summit Tunnel. On the Virginian Railway the Allegheny Summit tunnel between Yellow Sulphur and Merrimac, Va., which was 5176 feet in length, received during the year a ventilating system of two fans, which force the air at high velocity through the tunnel. This work facilitates materially the use of the tunnel, especially for west-bound trains, and the smoke is driven ahead of the engines, thus giving good ventilation under ordinary operating conditions.

California. A 2-mile street railway tunnel at San Francisco under Twin Peaks was planned during the year and the contract awarded. This would provide for a double-track electric railway and give access to an area of 7000 acres suitable for residences, and within 5 minutes' ride of Market Street, the east portal. The west portal would open up in the centre of the new Homeside tract, the length between portals being 12,000 feet. The estimated cost, including right of way, was $3,994,289. It was expected that sandstone and sand clay would be the principal material encountered, and the tunnel was to be lined with brick or concrete in the upper portion of the arch ring, and concrete in the remainder of the section.

In constructing the Stockton Street tunnel at San Francisco numerous problems had to be solved, due to the enormous weight of the shattered shales and schist, which had to be supported, though a small portion of the tunnel was through sandstone, and presented no difficulties. The work involved the erection of sub-timbering false work to carry the ground surface until the concrete lining was in place.

The Mount Shasta Power Corporation was engaged during the year in constructing a 7-mile tunnel to carry water from the Pitt River in Shasta Mountain, Cal., to the forebay of its projected powerhouse, the tunnel being 7 feet wide and 9 feet high, later to be enlarged to a width of 16 feet and a height of 19 feet. This tunnel was being worked from both ends and the entire length was to be completed to a 7x9 foot section before being enlarged. This was said to be the longest tunnel in America.

Ohio. At Cleveland, Ohio, a tunnel to extend the West Side intake into Lake Erie, 16,000 feet beyond the existing crib No. 4, which is 1⅛ miles from the shore, was under construction during the year. This tunnel was excavated by a clay tunneling machine, which was followed by an erector, which placed concrete blocks of cyclopean dimensions in rings. The extension was 100 feet below the water surface level and 50 feet below the ground surface. This work was in connection with an extension of the Cleveland Water Supply System. See Aqueducts.

Swiss Tunnels. The Munster-Grenchenberg tunnel in Switzerland was successfully pierced on October 27. This tunnel runs through the Jura Mountains, and is 5⅜ miles in length, thus making it longer than the Hauenstein Base tunnel, pierced on July 10, 5 miles, 94 yards in length. No special engineering difficulties were encountered, but two serious strikes occurred and the mobilization of the Swiss army interrupted the work, from August 1 to September 22, although the workmen were almost entirely Italians. It was thought the new line would be completed within 3 years and 6 months. The tunnel was built by the Bernese-Alpine Company (Lötschberg Company) and its completion in 1915 was anticipated. The Chemin de Fer de l'Est and the Lötschberg line will benefit by the Munster-Grenchenberg tunnel, which will afford the most direct route via Delle to the Lötschberg and the Simplon lines, and Italy, being 10⅝ miles shorter than the previous line, or about 40 minutes less in time consumed. The line was being laid with a single track for steam construction and was operated by the Swiss Federal railways. It will form an important link in the main line from Belfort to the Rhone Valley.

India. The longest tunnel in India is the one piercing the Khojak Range between Quetta and Chaman near the northwestern frontier. It is 12,870 feet in length. The second longest tunnel, 3900 feet in length, was being driven during the year on a double track cut-off between Thana and Diva. This by piercing a part of the Parsik Hill reduced the distance 11 miles from that of the existing line, and was to be used for through traffic.

TURBINES. See Internal Combustion Engines; Steam Turbines.

TURKEY, or the Ottoman Empire. Previous to the war in 1911–13 with Italy and the Balkan States, a vast empire, comprehending extensive possessions in southeastern Europe, southwestern Asia, and northeastern Africa. Capital, Constantinople.

Area and Population. The close of the year 1913, which marked the conclusion of the war of the Balkan allies against Turkey, saw the division of the majority of the Turkish possessions in Europe among the Balkan States of Bulgaria, Servia, Montenegro, and Greece, and the establishment of the independent State of Albania (q.v.). Greece and Italy occupied the Ægean Islands, although up to May, 1914, no definite provision had been made with regard to their ultimate disposal. Out of an original European area of 169,300 square kilometers, or 65,367 square miles, carrying a population estimated at 6,130,200, Turkey retained only 10,882 square miles, with 1,891,000 inhabitants (Constantinople vilayet, 1505 square miles and 1,202,000 inhabitants; Tchataldja mutessarifat, 733 and 78,000; Adrianople vilayet, 8644 and 610,000). Mohammedans preponderate in this territory. The city of Constantinople has 942,900 (with suburbs, 1,200,000) inhabitants; Adrianople has 123,000.

The great divisions of Turkey in Asia are Asia Minor, Armenia and Kurdistan, Syria and Mesopotamia, and Arabia. Their total area and estimated population by vilayets and mutessarifats is shown in the table below with density per square kilometer:

	Sq. km.	*Pop.*	*D.*
Archipelago	6,900	822,800	54
Ismid *	8,100	222,700	39
Bigha *	6,600	129,500	26
Brussa	65,800	1,626,800	26
Smyrna	55,900	1,896,500	34
Konia	102,100	1,069,000	18
Adana	39,900	422,400	12
Angora	70,900	982,800	16
Kastamuni	50,700	961,200	21
Sivas	62,100	1,057,500	19
Trebizond	32,400	948,500	44
Total Asia Minor	501,400	9,089,200	21
Erzerum	49,700	645,700	16
Mamuret-ul-Aziz	32,900	575,200	14
Bitlis	27,100	398,700	15
Diarbekr	37,500	471,500	11
Van	39,300	379,800	7
Total Armenia and Kurd.	186,500	2,470,900	13
Aleppo	86,600	995,800	11
Beirut	16,000	533,500	45
Lebanon *	3,100	200,000	161
Jerusalem *	17,100	341,600	22
Syria	95,900	719,500	9
Zor *	78,000	100,000	1
Bagdad	111,300	614,000	4
Mosul	91,000	351,200	3
Basra	138,800	433,000	3
Total Syria and Mes.	637,800	4,288,600	8
Hejaz	250,000	300,000	1
Yemen	191,100	750,000	4
Total Arabia	441,100	1,050,000	3

* Mutessarifat.

No census has ever been taken of the hordes of nomad tribes, whose subjection to Turkey is merely nominal. Reliable population figures by races are unobtainable; in a country so disorganized no attention has been paid to the compilation of accurate statistics, and though foreign statisticians have attempted numerous calculations, no two agree. Mohammedans form the majority of the population; Orthodox Greek Christians predominate in some districts, notably Macedonia, and Gregorians in Armenia; there are also Roman Catholics, Jews, Nestorians, etc. Mohammedan priests are estimated to number about 11,600 and are subject to the sheikh-ul-Islam, appointed by the Sultan; their priestly office is, however, hereditary. No accurate official census having been taken, the following figures for the population of principal cities must be regarded as estimates: Damascus, 250,000; Smyrna, 250,000; Aleppo, 200,000; Beirut, 140,000; Bagdad, 125,000; Erzerum, 120,000; Afiun, 95,000; Manissa, 90,000; Jerusalem, 84,000; Aidin, 80,000; Brussa, 80,000; Diarbekr, 80,000; Mosul, 80,000; Siva, 78,000; Urfa, 72,000; Aintab, 70,000; Mecca, 70,000; Basra, 60,000; Trebizond, 60,000; Adana, 50,000; Homs, 50,000; Hodeida, 49,000; Angora, 38,000; Tripoli, 32,000.

Primary instruction, which is nominally compulsory for Mohammedans, is intrusted to the clergy attached to the mosques and is confined mainly to the reading of the Koran. Under the law of Oct. 6, 1913, all children from six to sixteen are to receive primary instruction either in State schools, community or private schools, or at home. Provision for government inspection is made.

In Africa, Tripoli and Bengazi were lost to Turkey at the close of the Turco-Italian War, and Great Britain proclaimed a protectorate over Egypt, Dec. 18, 1914.

PRODUCTION. The empire contains much soil of exceeding fertility, but agricultural methods are primitive; and any incentive to the development of a modern system is hindered by the tithe system and by customs dues on produce exported from one province to another. The State holds title to the greater part of the agricultural land, which it leases for a "tithe," which with the supplemental payments required amounts to about 12 per cent of the gross produce harvested. This class of property is known as "miri." The tax-gathering is farmed out. The title to property known as "vakuf" is held, not by the State, but by some religious or charitable institution ("pious foundation") from which it is inalienable. This form of property is usually urban, nearly all of Constantinople being held under this tenure. There is also simple freehold tenure, but in comparatively small amounts. The labor problem is acute. Olive oil and wine are important products, and sericulture is carried on. In Asia Minor goats are numerous, and mohair is a leading export. Cereals are grown as well as tobacco, cotton, nuts, and various fruits. The world's supply of true Mocha coffee is a production of the Yemen Arab. Opium of a superior quality is produced. There are rich mineral deposits which are not worked, and fertile tracts through which no railroads run. Copper is mined near Trebizond and, on a larger scale, near Diarbekr. The extensive coal deposits of Heraclea, on the Black Sea, are exploited in a small way. Other minerals are chrome ore, silver-lead ore, zinc, manganese, antimony, emery, petroleum, salt, gold, mercury, arsenic, etc. Manufactures, in the western sense, are few and unimportant.

COMMERCE, ETC. By countries of origin and destination, statistics for 1911 (the latest available) are given below in thousands of piasters:

	Imps.	*Exps.*
United Kingdom	820,518	525,529
France	383,229	489,451
Belgium	145,607	61,837
Netherlands	79,527	38,889
Germany	329,078	130,862
Austria-Hungary	755,881	216,918
Italy	363,497	147,785
Greece	28,714	38,152
Bulgaria	103,677	74,316
Rumania	106,602	52,910
Russia	273,581	91,139
Servia	46,034	30,068

	Imps.	*Exps.*
Persia	69,098	4,452
British India	193,193	25,458
Egypt	114,868	156,525
United States	63,394	100,697
Other countries	141,646	54,810
Total, 1911	4,012,574	2,193,789
Total, 1910	3,593,603	1,829,927

Trade statistics for the empire are incomplete and unreliable, Turkey's returns differing widely when compared with the returns of countries of origin and destination. The principal domestic exports from the United Kingdom to Turkey, and imports from Turkey to the United Kingdom, are given below according to Board of Trade Returns, for three years:

Exports from U. K.:	*1910*	*1911*	*1912*
Coal and coke	£374,637	£352,708	£278,186
Cotton yarn	338,324	437,841	588,110
Cottons	5,280,393	5,792,596	4,919,741
Woolens	940,478	704,150	556,084
Iron mfrs.	201,608	274,147	211,775
Machinery	284,017	375,274	315,148
Imports from Turkey:	*1910*	*1911*	*1912*
Barley	£491,401	£1,897,448	£1,441,286
Raisins	888,768	526,728	820,464
Angora hair	704,520	404,318	637,125
Wool	267,005	327,876	235,986
Woolens	270,648	266,811	275,592
Opium	291,702	274,140	252,288

The total trade of the empire for 1912 with the United Kingdom is given at £14,539,852; with Germany, £9,070,325; with France, £7,302,431; with the United States, £5,209,474.

There entered and cleared at Constantinople in 1912, 18,318 vessels, of 15,080,562 tons. This number included, in the foreign trade, 3706 sailing vessels of, in the aggregate, 196,784 tons; 1357 steamers of 2,507,886 tons sailing regularly, and 7678 steamers of 11,941,258 tons not sailing regularly; in the coasting trade, 3261 sailing vessels, of 73,901 tons, and 2316 steamers, of 360,733 tons. The merchant marine in 1911 included 120 steamers, of 66,878 tons, and 963 sail, of 205,641 tons.

COMMUNICATIONS. In the following list, the lines with an asterisk have a kilometric guarantee. In Europe the Salonica-Monastir Railway * was reported Jan. 1, 1913, to have 136 miles in operation; the Constantinople-Salonica,* 317; the Oriental Railways, 593—a total of 1046 miles. The Asiatic lines were: Haidar-Pasha-Angora,* 358 miles; Eshki-Shekir-Konia,* 283; Mudania-Brussa, 25; Smyrna-Cassaba,* 165; Alasheir-Afion-Karahissar, 156; Smyrna-Aidin, 320; Konia-Eregli-Persian Gulf,* 125; Mersina-Adana, 42; Beirut-Damascus, 96; Rayak-Aleppo,* 295; Damascus-Medina, 812; Jaffa-Jerusalem, 54; Haifa-Deraa, 105—a total of 2836 miles in Asiatic Turkey. The German concession of the Bagdad Railway is to extend the Anatolian line from Konia to Adana, Mosul, Bagdad, and Basra, with numerous branch lines and an extension to the Persian Gulf. It has been finished as far as Bulgurlu, about 15 miles beyond Bregli. The extension of the Haifa line to Deraa connects with the Mecca Railway. Projected lines contemplate 628 miles of line and 440 of junction line in Europe and 4940 in Asia.

It was reported at the end of the year that a section of the Smyrna-Cassaba Railway had been destroyed by the Turkish military authorities, rendering the operation of the railway from Smyrna impossible.

FINANCE. The unit of value is the Turkish pound of 100 piasters; par value, $4.39642. The details of the 1912–13 budget are as follows: £T14,870,381 revenue from direct taxes, £T5,692,728 indirect taxes, £T1,361,886 stamps, etc., £T3,621,373 monopolies, £T301,867 State enterprises, £T893,877 tribute, £T1,178,513 pensions, £T868,764 domains, £T1,724,770 various—a total revenue of £T30,514,159. Total expenditure, £T57,164,450, disbursed as follows: £T15,790,983 finance and debt, £T21,601,453 war, £T6,046,000 marine, £T3,899,633 public works, £T4,037,287 administration, £T1,143,648 instruction, £T497,700 indirect taxes, £T505,880 civil list, £T218,711 legislature, £T264,079 foreign affairs, £T118,195 survey, £T789,566 justice and worship, £T484,858 agriculture, £T858,000 posts and telegraphs, £T523,288 sheikh-ul-Islam, £T25,170 court of accounts. The total debt stood, Sept. 24, 1912, at £T149,147,052. Nominal capital in circulation, £T131,839,978.

ARMY. Turkey after its defeat in the Balkan War of 1912 naturally was involved in considerable army reorganization, the German drill masters still being retained. Much of the military organization was kept secret since that war, especially with regard to the *Redif* (reserves), but it was the opinion of military observers that the Turkish forces were distributed in 13 army corps and 2 independent divisions, and that the whole of the Turkish Empire was divided into 4 army inspections, viz.: Constantinople, Ersindjan, Damascus, and Bagdad. The probable distribution of these 13 army corps in 1914 was as follows: Constantinople, Adrianople, Rodosto, Smyrna, Konia, Aleppo, Yemen, Damascus, Erzerum, Ersindjan, Van, Mossul, and Bagdad. On a peace basis each army corps would consist of 3 divisions of 3 regiments each, each having 3 battalions. Each division, in addition, would have one chasseur battalion and one artillery regiment of 2 corps each, each corps consisting of 2 battalions. Every regiment was to have a machine gun company, and each army corps from 1 to 2 cavalry regiments. The aëronautical sections and technical troops were also being trained and developed. The total strength of the Turkish army available for a European war was approximately 246 officers, 1300 officials, 600,000 men, 80,000 horses, 1048 guns, and 430 machine guns, while for a war in Asia it was believed that there would be 7000 officers and officials, 400,000 men, 50,000 horses, 500 guns, and 100 machine guns available. Every Turkish subject is liable for service, this obligation resting on Christian and Mussulman alike, as was the case originally. The Christian enrollment, however, was made comprehensively, and such recruits were usually sent away from their native districts. Towards the latter part of the year and especially when Turkey, joining with Austria and Germany, declared war on Russia, there was little information available as to the strength and organization of the Turkish army.

NAVY. The effective fleet, in October, 1914, included 4 battleships, 2 protected cruisers, 2 torpedo craft, 15 gunboats, 8 torpedo boat destroyers, and 16 torpedo boats. At the Vickers firm in Barrow a super-dreadnought of 23,000 tons displacement, 21 knots speed, and a main armament of 10 13.5-inch guns, besides 16 6-inch guns, and 5 torpedo tubes, was launched, September 3, 1913; but on the declaration of war she was bought by Great Britain (renamed *Erin*), as was also the *Osman I*, completing at

Elswick (renamed *Agincourt*). The *Goeben* and the *Breslau*, reported in the first days of the war as sold to Turkey, retained their German crews and officers, were repaired under German direction, and put out into the Black Sea under German command. At the end of September, 1914, the British naval mission under Rear Admiral A. H. Limpus returned to England. The war personnel included, in October, 1914, about 13,000 officers and men.

GOVERNMENT. The fundamental laws of the empire are based on the precepts of the Koran, and the Sultan exercises both temporal and spiritual authority. A grand vizier, appointed by the Sultan, forms the cabinet. At the head of ecclesiastic affairs is the shiekh-ul-Islam, under the direction of the Sultan. The legislative body is composed of a Senate and a Chamber of Deputies. Reigning Sultan, in 1914, Mohammed V, born 1844, succeeded April 27, 1909. Heir-presumptive, Yussuf Izzedin, son of Abdul Aziz, born 1857. The cabinet as reconstructed after the assassination of the grand vizier, Mahmud Shevket Pasha, in June, 1913, was composed as follows: Said Halim Pasha, grand vizier and minister for foreign affairs; Hairi Bey, sheikh-ul-Islam and minister of pious foundation; Talaat Bey, interior; Ibrahim Bey, justice; Ahmed Mahir Bey, president of the Council of States; Brig. Gen. Enver Pasha, war; Mahmud Pasha, marine; Javid Bey, finance; public works, vacant; Shukri Bey, instruction; Ahmed Nessimi, commerce, agriculture, and mines; posts and telegraphs, vacant; Emin Bey, under-secretary of state for the grand vizier.

HISTORY

ENVER BEY AND THE ARMY. At the beginning of January, 1914, Enver Bey was given the portfolio of war in the Turkish cabinet and promoted to the rank of brigadier general, with the title of "Pasha." As a conspicuous Young Turk, Enver Pasha, as he was now called, was expected to use his official powers in order to strengthen the hold which the Committee of Union and Progress had upon the army; but public opinion was not quite prepared for the sweeping exercise of power with which he inaugurated his administration. Assuming to himself the office of chief of the general staff, and calling to his side Hafiz Hakki Bey (former military *attaché* at Vienna), Enver Pasha proceeded to place on the retired list almost 300 army officers, among whom were Ibrahim Pasha, Mahmud Mukhtar Pasha, and other famous leaders. Over 500 subalterns and 200 civil employees in the department of war were also discharged. A second feature of Enver Pasha's régime in the war office was the predominance of German influence. Enver Pasha himself had served as a military *attaché* in Germany, and his most trusted lieutenant had been military *attaché* at Vienna. Arrangements were made for a German military mission to Turkey, and the German general, Liman von Sanders, was to assume command of the first Ottoman army corps while directing a thorough reorganization of the Turkish land forces. So strenuous a protest was made by Russia and the other powers of the Triple Entente against this triumph of German military influence, that General von Sanders was deprived of his command and installed as inspector-general of the Ottoman army, with the rank of marshal, for five years. With the aid of other German officers, during the summer of 1914, he carried out a general reform and redistribution of the Turkish army.

ARMENIAN TROUBLES. Early in February the Russian chargé d'affaires, M. Gulkevitch, arrived at an understanding with the grand vizier, Prince Said Halim, regarding reforms for the six Armenian vilayets, but details of the understanding were not announced. Somewhat later reports were received to the effect that the Turkish government and the Armenian patriarch had agreed on Armenian participation in the general elections, the Armenians receiving 16 seats in the chamber. The agreement thus heralded, like so many previous Armenian agreements, did not put an end to the periodic outbreak of civil strife between the Kurdish tribesmen and the Armenian Christians, for in April the town of Bitlis was attacked by the Kurds and new "Armenian atrocities" were committed.

FRANCO-TURKISH LOAN CONVENTION. A Franco-Turkish Convention was signed in Paris on April 8–9 by M. Doumergue and Djavid Bey, according to which: (1) France granted to Turkey a loan of 800,000,000 francs ($160,000,000), of which no part was to be used for war-expenses; (2) France agreed to support the fiscal reorganization of Turkey and to recognize, subject to the approval of the other Powers, a four per cent increase in the Turkish tariff, and the creation of monopolies for alcohol, matches, playing cards, etc. In return, France obtained from Turkey concessions (1) in Syria for some 900 kilometers of railway, and the ports of Jaffa, Caiffa, and Tripoli-in-Syria, and (2) in Armenia for some 2000 kilometers of railway and the ports of Heraclea and Ineboli. Before the war broke out in August only half of the first installment of the loan had been paid by France.

PARLIAMENT. The Turkish Parliament was formally opened on May 14. Fuad Bey, first secretary of the palace, read the Speech from the Throne, rehearsing the events which had transpired since the dissolution of the preceding Parliament on Aug. 4, 1912; affirming the impossibility of allowing Greece to retain the Ægean Islands so necessary to Turkish control over Asia Minor; declaring that the vilayet or provincial administration must be reformed and subjected to the inspection of international controllers; insisting upon the prime necessity of a strong fleet; and congratulating the empire upon the financial convention recently concluded at Paris. Hali Bey, who was elected Speaker of the Chamber of Deputies, in his inaugural address eloquently urged his fellow-countrymen never to forget and never to abandon the lost provinces of Salonika, Monastir, Janina, Scutari, Kossovo, and Uskub. In his Budget Speech in July, Djavid Bey referred with satisfaction to the loan agreement with France, and to similar negotiations pending in London and Berlin, with regard to increasing the customs duties and establishing various government monopolies.

TURCO-GREEK CRISIS. During the spring and summer of 1914, relations between Turkey and Greece became strained almost to the breaking point. The two Balkan Wars and the treaty of Bucharest (Aug. 10, 1913) had resulted in the annexation by Greece of a large part of Macedonia and the Ægean Islands which had hitherto been under Turkish rule, and undoubtedly contained a considerable sprinkling—whole villages in certain localities—of Mohammedans. There were also numerous communities of Greek people living in Turkish Thrace and Asia Minor. After the war these minorities, the Turks in Greek Macedonia and the Greeks in Turkish Anatolia (which is the same as Asia Minor), found their position most uncomfortable, in the midst of a hostile nation and under the rule of an unfriendly government. Consequently large numbers of Turkish villagers began to emigrate from the new Greek provinces in Macedonia, and to settle in what remained of Thrace under Turkish rule, or in Asia Minor. Frequently, upon arriving in Asia Minor, they would take forcible possession of the homes of Greek villagers living there, as compensation for the homes left in Macedonia; and, in the excitement of national hatred, riots occurred, accompanied by looting, murder, and rape. At Phocea in Asia Minor about 50 Greeks, and at Serekeui about 40 Greeks were massacred. In a panic of fear thousands and tens of thousands of Greeks fled from Asia Minor to Greece. In May the Œcumenical Patriarch, his Holiness Germanos V, appealed to the Sultan to remedy the Greek grievances. In June, as a further protest, the Patriarch closed all Orthodox churches and schools. The situation was becoming serious. An anti-Greek boycott still further inflamed national animosities in Asia Minor, and steady streams of angry immigrants continued to flow from Greece into Asia Minor and from Asia Minor into Greece. On June 12 the Greek government delivered a note remonstrating against the mistreatment of Greek inhabitants of Asia Minor. The reply vouchsafed by the Porte (June 18) laid the blame on Greece, insisting that the regrettable incidents in Asia Minor were caused by the influx of 200,000 destitute Turks who had been forced by the Greeks to leave their homes in Macedonia. Greece and Turkey appeared to be on the verge of war. Two other factors in the situation ought to be mentioned. First, there were the Ægean Islands, which Greece had occupied during the Balkan War and which she was determined to retain, Turkey being no less determined to regain them. And, secondly, there was growing up a dangerous rivalry between the Greek sea power and the Turkish fleet. In January Greece was excited by the announcement that Turkey had purchased two dreadnoughts which were being constructed in British naval yards, one from Brazil and the other from Chile. In addition to the *Sultan Osman* and the *Reshadieh*, as these two powerful ships were to be named, several smaller vessels were also to be added to the Turkish navy. The "Jingo" Press in Greece urged an attack on Turkey before the latter had received her new ships. Instead of attacking, Greece entered into competition with her enemy, by purchasing, in July, the *Idaho* and the *Mississippi* from the United States. The purchase was well calculated to dampen the ardor of the Young Turk Chauvinists, and at the same time to moderate the panic which had been occasioned in Greece by the anticipation of an increase in the Turkish fleet. Moreover, Servia delivered a timely warning in Constantinople that in case of a Greco-Turkish conflict, Servia could not remain on friendly terms with the Ottoman Empire. And presently Russia and Rumania advised the Porte that they would consider it a serious blow to international trade if the Dardanelles should be closed in event of a Greco-Turkish war. Bulgaria apparently intended to remain neutral, and thus practically to prevent a war on land. All these considerations made for peace. A supplementary Turkish communication to Greece on the subject of the dispossessions in Asia Minor, was more conciliatory than the first Turkish reply had been; it proposed an exchange of properties between the Greek refugees from Asia Minor and the Turkish fugitives from Macedonia. A second Greek note, couched in conciliatory but firm language, contributed still further to an understanding. The excitement in Asia Minor had by this time been much allayed by a visit of the Turkish minister of the interior, Talaat Bey. While anxious as far as possible to make amends to Greece, Talaat Bey pointed out that it would cost the Turkish government about a hundred million dollars to settle the Turkish Macedonian refugees in remote parts of the empire, and that he could hardly turn out the Mohammedans who were now occupying the homes deserted by the Greek emigrants. As the best immediate remedial measure both governments agreed upon the exchange of properties between Greek and Turkish refugees. The immediate fear of a Greco-Turkish war had passed, but the question was by no means settled. To discuss the basis of an improved understanding between the two nations, M. Venizelos (the Greek premier) and the grand vizier were to have met in a semi-official conference at Brussels at the end of July, but on account of the general European crisis the meeting was called off and this somewhat forlorn hope of an amicable understanding vanished.

Turkey and the War of the Nations. Upon the outbreak of the War of the Nations in the early days of August, Turkey ordered a mobilization of men between the ages of 20 and 45 years. For three months Turkey remained more or less neutral, but finally entered into the conflict in aid of Germany, and war was declared on November 5. The events leading up to this decision, and the operations of the war, will be found amply treated in the article on the **War of the Nations**.

But a few facts belong more properly to the history of Turkey. On September 10 Rustum Bey, the Turkish ambassador in Washington, announced that Turkey had decided to abrogate all conventions or Capitulations whereby the Sublime Porte had in times past restricted its own sovereignty or conferred special privileges upon foreign Powers. Starting with France in 1535, one by one the various Powers had obtained "Capitulations" or agreements from the Porte, granting to their nationals in Turkey, liberty of residence and of travel, inviolability of domicile, freedom of religion, and, to a certain extent, the right to be tried by courts of their own nationality. The abrogation of the Capitulations was therefore a most important event. It is noteworthy that the French Capitulation of 1740 was not to be modified or terminated without the consent of France. A most unpleasant indication of the spirit at Constantinople was afforded in October by the annulment of the scheme for the reform of the six Armenian vilayets. The war caused several adjustments in the cabinet. Before entering into the war Enver Pasha and his bellicose associates eliminated from the cabinet (November 2) the ministers of agriculture, of the interior, and of posts and telegraphs, who had favored peace. In December German officers were reported to have accepted the portfolios of war and of marine in the Turkish cabinet, after Enver Pasha and Djemal Pasha had left for the front.

Turkey and Servia at last concluded a treaty of peace at Constantinople on March 14, 1914, and diplomatic relations between the two countries were resumed. Extreme irritation was caused in December by the Hodeida incident. On December 11, at Hodeida in Arabia, Turkish soldiers had invaded the Italian consulate and seized the British vice-consul, G. A. Richardson, who had taken refuge there. The strenuous protests of the Italian government elicited suave apologies from the Porte, but failed to bring satisfactory reparation.

For other topics concerning Turkey, see *History* sections under CYPRUS, EGYPT, and GREAT BRITAIN; and WAR OF THE NATIONS.

TURKS AND CAICOS ISLANDS. Two groups of islands, over 30 in number, geographically part of the Bahamas, but forming a dependency of the British colony of Jamaica. Only 8 are inhabited. Total area, 169 square miles; population (1911), 5615. Grand Turk is the principal island and the government seat. The imports and exports in the 1912 trade were valued at £27,662 and £25,947 respectively. Revenue and expenditure, 1912, £8215 and £8092 respectively. There is no debt. Salt making is the only important industry, the export of salt in 1912 being valued at £18,603. The soil is low-lying and barren, and nearly all provisions for home use are imported. F. H. Watkins, appointed 1906, was Commissioner in 1914.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE. An institution for the industrial and higher education of negroes, founded at Tuskegee, Ala., in 1881, by Booker T. Washington. In the autumn of 1914 there were 1527 students enrolled in all departments of the institute, and the faculty numbered 192. There were received from legacies during the year ending May 31, 1914, $122,436. The endowment fund on the same date amounted to $1,942,112, and the total income for the year ending May 31, 1914, was $473,764. The library contains about 20,000 volumes. The principal is Booker T. Washington.

TWILIGHT SLEEP (DÄMMERSCHLAF). To this method of anæsthesia, or amnesia, was given great prominence in several lay journals and magazines during 1914. These productions were highly colored, exaggerated on the one hand the pains of ordinary parturition (one writer describes them as a "shrieking horror"), and overestimated on the other hand the benefits conferred by this procedure. In addition to this, by implication, at least, they made it seem true that babies born during twilight slumber are much more vigorous mentally and physically than their brothers and sisters born under ordinary conditions. The basis on which these articles rest are the results obtained in the Freiburg Maternity Clinic, by Krönig and Gauss. The history of the method is interesting, and began some 8 or 9 years before this exploitation. Steinbüchel, of Graz, began using small doses of morphin and scopolamin with no dangerous results. His followers used repeated doses of both morphin and scopolamin, but in larger amounts, with the result that there were serious consequences, particularly the death of the infant. In 1907 a special technic was elaborated in the Freiburg clinic by Gauss. The object aimed at was to make the parturient woman forget her pains, although she may be conscious of them at the time. In order to test the mental condition she is shown some object, and after an interval of half an hour this object is again called to her attention. If she remembers having seen it before, she is not sufficiently amnesic and an additional dose of scopolamin is given. It is strongly emphasized that only one dose of morphin (about one-sixth of a grain) must be given, although scopolamin may be repeated. Scopolamin also has its dangers, small doses sometimes producing great disturbances of the nervous system, of the heart, and of the lungs, and it is impossible to predict these results in a given patient. The impression derived from a review of the literature was that the method is not safe for the child and not always safe and successful for the mother. This view was supported by the insistence of its most ardent advocates that the method should only be applied in hospital surroundings. It is necessary that the physician or physicians and nurses in attendance shall be with the patient from the initial pain until sometime after the child is born. Relatives are not permitted in the room. Krönig himself remarks: "The disadvantages of this method consist in the fact that with some women, especially when the surroundings are not very quiet, transitory states of confusion of mind and excitement occur. These are of no material importance, so long as the relatives of the mother do not remain in the room, for these states of excitability make an unpleasant impression on the family. In consequence of this, we carry out the method of twilight sleep only in cases where the relations promise to be out of the room during the whole time of the birth." Lequeux says: "The patient is delivered as in a delirium." Other observers find that in a large number of cases the second stage of labor is unduly prolonged and the proportion of forceps deliveries increased. The situation may be summed up by saying that the method will be successful in about 80 per cent of cases where every precaution can be taken as to surroundings, and a physician skilled in the method can be obtained. The miscellaneous application of twilight sleep is bound to result in a large number of fatalities and complications both for the mother and child.

TYPHOID FEVER. The city of Hanford, Cal., experienced an explosive outbreak of typhoid fever in 1914, which was traced to a single individual, a "carrier," a woman who prepared food for a public dinner and who never suspected that she had ever had typhoid fever. Ninety-three cases were traced to this dinner. Two of these persons had traveled over 200 miles to San Francisco, and there developed the disease, three cases traveled to Fresno, 30 miles away, before the illness seized them, and other persons were scattered in various directions from the centre of infection at Hanford, thus illustrating how a single focus may spread the disease over a wide territory. The manner in which infection took place was also interesting. After a good deal of investigation, infection was traced to a dish of spaghetti. The spaghetti was prepared at the home of the "carrier," brought to the banquet and there heated just before serving. The disconcerting fact appears to be that the dish was infected by the carrier at her home and then reheated, which process, instead of killing the bacilli, caused them to multiply. Laboratory examination showed that the dish was swarming with bacilli and that the sauce used in making it was a good culture medium. The death-rate from typhoid fever per 100,000 population in the registration area of the United States during the year 1912, the latest report available, was 16.5, while in nearly 100,000 officers and men of the United States army, who were protected by vaccination, not a single death occurred. These statistics were quoted by Bass to show the value of the procedure.

TYRRELL, Robert Yelverton. An Irish educator and literary critic, died Sept. 21, 1914. He was born at Ballingarry, County Tipperary, Ireland, in 1844, was educated at private schools and at Trinity College, Dublin, becoming a fellow at that university in 1868, professor of Latin in 1874, and professor of Greek in 1880, in which chair he served until 1898. He became senior tutor and public orator in 1899, and from 1900 to 1904 was professor of ancient history, which, with other offices, he resigned on being appointed registrar in 1904. He was one of the original Fifty Fellows of the British Academy, and in 1881 he was one of the commissioners of education in Ireland. His published writings include: *Correspondence of Cicero* (vols. i, ii, 1879 to 1886; vols. iii, iv, v, vi, and vii, with Dr. Purser, 1890 to 1900); *Latin Poetry* (1893); *Sophocles* (1897); *Essays on Greek Literature* (1909). He was also a frequent contributor to the leading English quarterlies and reviews.

U-9. See War of the Nations.

UDO. See Horticulture, *New Fruits.*

UGANDA PROTECTORATE. A British possession in East Africa (estimated area, 117,681 square miles, exclusive of lakes) made up of 5 provinces—Rudolf, Eastern, Northern, Western, and Buganda. The population, as estimated March 31, 1913, included 622 European males and 201 females, 3110 Asiatics, and 2,889,651 Africans. Neither area nor population can be accurately estimated, no survey having been completed and no census having been taken. Mengo is the native, Entebbe the British capital. The country is unsuited for European habitation, malaria, spirillum fever, dengue fever, and sleeping sickness being prevalent. Coffee, rubber, and cacao are among the exports. Cotton is the most important crop, the export for 1912–13 being 6313 tons, valued at £254,379; in addition, 5614 tons of cotton seed, valued at £11,335, were exported. Cattle are plentiful. Imports, exclusive of specie and bullion, but including goods in transit, were valued at £659,343 (£528,163 in 1911–12); exports, £452,310 (£384,700). Revenue, in 1912–13, £238,655 (£203,492); expenditure, £292,147 (£283,689); grant-in-aid, £45,000 (£65,000).

The so-called Uganda Railway lies entirely in the East Africa Protectorate (q.v.), where there were two short railways, the Busoga from Jinja to Namasagali, and the Kampala-Port Bell Railway, which are under the control of the Uganda Railway running from Mombasa in British East Africa to Kisumu on Lake Victoria, where connection is had with a steamer service to Uganda. The King of Uganda is Baudi Chua, born Aug. 8, 1896, succeeded, 1897. Governor and Commander-in-chief, F. J. Jackson.

ULSTER AND HOME RULE. See Great Britain, *History.*

ULSTER VOLUNTEERS. See Great Britain, *History, passim.*

ULTRAVIOLET RAYS. See Radiotherapy and Roentgenology.

UNA-FLOW ENGINE. See Steam Engine.

UNCINARIASIS. See Hookworm Disease.

UNDERGROUND WATERS. See Geology.

UNDERWOOD, Oscar W. An American public official, elected in 1914 United States Senator from Alabama. He was born in Louisville, Ky., in 1862, was educated at the Rugby School in that city and at the University of Virginia. He studied law and in 1884 was admitted to the bar at once beginning practice in Birmingham, which city has continued to be his residence. In 1892 he was chairman of the Democratic Executive Committee of the ninth district of Alabama and was chairman of the Democratic Campaign Committee which adopted the present constitution of Alabama. In 1895 he was elected to the Fifty-fourth Congress and was reëlected to successive Congresses up to and including the Sixty-third. Mr. Underwood from his first entrance into Congress was recognized as possessing rare talents as a legislator and his reputation steadily grew through successive Congresses. In the Sixty-third Congress he was chairman of the Ways and Means Committee and had in his charge the Tariff Bill passed by that Congress. His conduct of this bill through the House of Representatives greatly increased his reputation and he became recognized as the most prominent and one of the ablest members of the House. Although not a notable debater, Mr. Underwood is an effective speaker, and a profound student of economic problems. President Wilson found for the most part in Mr. Underwood a strong supporter, but he differed from the President on the Panama Tolls Bill and steadily resisted the passage of that bill in the House. (See Panama Canal Tolls.) While still engaged in his work in the House Mr. Underwood was in April, 1914, elected candidate for the United States Senate against Richmond P. Hobson. While Mr. Hobson was conducting an aggressive campaign, spending the greater portion of his time in Alabama, Mr. Underwood did not leave his duties in the House. (For details of this campaign, see Alabama.)

UNEMPLOYMENT. The problem of unemployment is considered by students of industrial problems as one of the most serious and probably the most difficult of solution of all problems connected with the betterment of labor. In times of depression the entire western world is impressed with the far-reaching consequences of unemployment in relation to poverty, sickness, vice, crime, and almost every social ill. Every community is also at times aware of more or less unemployment due to the seasonal changes in industry. This is especially marked in farming, railroading, millinery, and all branches of the men's and women's clothing trades. But in addition to these instances of unemployment on an extensive scale there is at all times in every industrial community a considerable amount of irregularity in employment. The United States census for 1900 (1910 not yet published) reported unemployment in that year which involved an aggregate loss in wages of nearly one billion dollars. In the winter of 1913–14 the extent of unemployment was much greater than in any year since 1907–08. The Superintendent of the Employment Bureau of the New York Association for Improving the Condition of the Poor estimated that on any given day in the winter, 1913–14, there were at least 324,000 men unemployed in that city. Mayor Mitchell secured replies from 400 out of 840 private employment agencies showing that only 17 per cent of applicants were placed while 41 per cent of available places were not filled. The situation was aggravated by the presence of many floaters, raw immigrants, and other nonresidents. There resulted various demonstrations led by labor agitators, especially the invasion of various churches. (See INDUSTRIAL WORKERS OF THE WORLD.) A temporary free employment bureau was opened by the city.

In the fall and early winter of 1914 the extent of unemployment was even greater than a year earlier; every city had its unemployment problem. Relief agencies were overwhelmed in many places; municipal lodging houses were full to capacity, and many genuine seekers for work were sleeping on bare boards in docks, warehouses, and other accessible shelters. Many relief committees sprang into existence in November and December all over the United States; and municipal and State governments expanded public construction work as a means of partial relief.

NATIONAL CONFERENCE. The American Association for Labor Legislation held the First National Conference on Unemployment at New York City, Feb. 27 and 28, 1914. Delegates were present from 59 cities and 25 States, and the conference was opened by Mayor Mitchell. Addresses were given by university professors, social workers and officers of the Association, public officials, Socialists, Single Taxers, and labor leaders. It was manifest that statistics of unemployment were wholly lacking in the United States.

The solutions advanced included industrial and governmental measures and preventive methods; no immediate solution was advanced except by Socialist and Single Tax advocates. Unemployment insurance was prominent among relief measures advocated. The following remedies were put forward: public labor exchanges; systematization of industry, especially the dovetailing of seasonable employments; proper distribution of immigrants; vocational education; and the abolition of child labor. Every phase of the problem was considered. Substantial agreement was shown on the following points: the necessity for accurate labor statistics; the need for a widespread system of Federal labor exchanges; the urgent duty of employers to do all in their power to regularize employment; the need for industrial training and vocational guidance; and the inauguration of an effective system of unemployment insurance.

The resolutions adopted urged the establishment in the Federal Department of Labor of a Bureau of Distribution with power to establish employment exchanges throughout the country to supplement the work of State and municipal bureaus. Legislatures were urged to establish or reconstruct free nonpolitical State employment agencies controlled by the merit system and sustained by adequate appropriation and having a system of branches. Municipalities were directed to give attention to local problems of unemployment. It was recommended that private employment agencies for profit be brought under Federal or State inspection and control. The association, in coöperation with the American Section of the International Association on Unemployment, was urged to undertake a thorough study of the labor market, labor exchanges, emergency and relief measures, the regularization of industry, casual labor, vocational guidance, and unemployment insurance.

Under the auspices of the Association the Second National Conference on Unemployment was held at Philadelphia, December 28–29. This was participated in by municipal officials, relief executives, and investigators. Public action by the city was discussed by Morris L. Cooke, director of public works, Philadelphia; action by the State by John P. Jackson, Commissioner of Labor and Industry of Pennsylvania; and action by the nation by Meyer London, Socialist Congressman-elect from New York City.

The second annual conference of the American Association of Public Employment Offices was held at Indianapolis, September 24–25. There were present 43 delegates from State employment offices and labor commissions. The lack of reliable statistics of unemployment and of the means of securing them was discussed. Attention was also paid to the plan of the United States Commission on Industrial Relations to establish a national commission of labor exchanges to coöperate with State and local public employment offices. Resolutions were passed calling for the rapid elimination of all private agencies operated for profit and requesting Federal coöperation in the distribution of labor between States. A legislative committee was appointed and also a committee charged with devising a uniform system of records and reports to be recommended for all public employment offices.

MEETING THE PROBLEM. In addition to the numerous relief committees mentioned below, the conferences above referred to, a conference of the labor commissioners of six States at Chicago, and the announcement of the Industrial Relations Commission (q.v.) that it would undertake an investigation of employment, some legislation was enacted. The most important was a law by the New York Legislature, on March 28, establishing a State system of employment exchanges. (See paragraph *Legislation*.) This followed a special message of Governor Glynn on March 6, and was the most important legislation of the year on this matter. In the early fall nine employment offices were opened in the principal cities of the State, all coördinated by a central bureau. On October 28 Mr. Charles B. Barnes was appointed director of this new employment bureau. In March Mayor Mitchell of New York City urged upon the Board of Aldermen the creation of a municipal employment bureau, and an ordinance carrying out this suggestion was adopted on April 28. In close affiliation with the American Association for Labor Legislation is the American Section of the International Association on Unemployment. These two bodies discussed means of attack upon this problem in the United States, and began the formation of committees on unemployment and relief in various States. In Chicago, Mayor Carter H. Harrison appointed an unemployment commission. This organized in seven committees dealing with the nature and extent of unemployment, methods of securing employment, effects of immigration, the dovetailing of employments, methods of relief, vagrancy and mendicancy, and the relation of vocational training and guidance to unemployment. This commission recommended the establishment of a labor exchange carefully safeguarded against the political spoils system. Similar committees were organized in every important industrial centre. Bills were introduced in Congress by Representatives Murdock of Kansas and McDonald of Michigan to create a National Employment Bureau. This Bureau would have branches throughout the country and would coöperate with State employment offices. The McDonald scheme called for the use of post offices as agencies.

PUBLIC EMPLOYMENT EXCHANGES. Mr. Solon de Leon made a study of the operation of public employment exchanges in the United States. He found such in 18 States and 15 municipalities. None of the Southern States were included in this list nor any of the Mountain States except Colorado. The number of offices maintained in each State was as follows: Colorado, 4; Connecticut, 5; Illinois, 8; Indiana, 5; Kansas, 1; Kentucky, 1; Maryland, 1; Massachusetts, 4; Michigan, 5; Minnesota, 3; Missouri, 3; Nebraska, 1; Ohio, 5; Oklahoma, 3; Rhode Island, 1; South Dakota, 1; West Virginia, 1; and Wisconsin, 4.

LEGISLATION. The legislation of the year included the creation of public employment bureaus in Louisiana, Maryland, and New York, and a popular referendum in Washington which had the effect of eliminating private employment agencies from that State. Louisiana authorized city councils to maintain free employment bureaus. Maryland established in its bureau of immigration an agricultural employment department. The notable law of the year was enacted in New York. This created in the Department of Labor a Bureau of Employment in charge of a director of approved executive ability and scientific knowledge. The commissioner of labor was authorized to establish branches throughout the State, in each of which he was required to appoint an advisory committee of employers and employees with a chairman agreed on by the majority. Notice of a strike or lockout may be filed with the employment office by employers or employees and this information must be conveyed to the opposite party in the dispute. Applicants must then be informed of such dispute. The officers may organize subdivisions for men, women, and children. Applicants between the ages of 14 and 18 may register at school on special forms which will then be transmitted to the employment office. Each advisory committee must appoint a subcommittee on juvenile employment. Coöperation of the branches including an exchange of lists of vacancies is required; and the Commissioner is authorized to expend 5 per cent of the employment bureau's appropriation in soliciting business. The publication of a bulletin giving information regarding the state of the labor market is required.

GREAT BRITAIN. Beginning in 1910 Great Britain adopted a policy of establishing an extensive system of public employment offices. These are headed by a central office at London, and 8 divisional offices at London, Bristol, Birmingham, Doncaster, Warrington, Cardiff, Glasgow, and Dublin, which supervise 423 labor exchanges that are connected with 1066 local agencies. The aim has been to place an agency within five miles of every considerable body of workers. These offices employ a total of about 5000 clerks and supervisors, and have proved a most valuable aid in the distribution of surplus labor.

UNEMPLOYMENT INSURANCE. An analysis of the present status of unemployment insurance shows that all schemes may be classified under three general headings, namely, (1) public subsidies to the unemployment insurance funds of trade unions; (2) State or communal voluntary unemployment funds; and (3) compulsory insurance. The first of these systems is practiced extensively in Germany, Belgium, Holland, France, Luxemburg, and Switzerland without State regulation. The same principle, but with legal regulation for the entire country, is found in Norway, Denmark, and Great Britain. The last country has introduced compulsory insurance for the building and allied trades including about 2,500,000 workmen. The system of subsidizing workingmen's unions is known as the Ghent system. It has been extensively practiced because it imposes light financial burdens upon the State or city and is easy of introduction; but it is not believed by students of the problem to be an effective solution for this far-reaching industrial evil. The voluntary employment funds to which any workingman of the city is entitled to contribute and from which he may draw benefits after meeting certain conditions have been best administered in Berne, the Canton of Basel, and the city of Cologne. A combination of the subsidy of voluntary unemployment funds has been tried in Bavaria and Württemberg. These funds have not succeeded in meeting the situation because a relatively small proportion of those who ought to be protected by unemployment insurance will voluntarily make the sacrifices necessary to pay their premiums. Aside from a short experiment in the city of St. Gall and the recent introduction of the idea in the watch and clock industry in the Swiss Canton of Nuremberg, and the English case above noted, compulsory unemployment insurance has not been tried.

In Norway 400,000 wage earners, and in Denmark 500,000 wage earners are insured under voluntary schemes. In France, on the other hand, fewer than 50,000 workmen, in Belgium only slightly more than 100,000, and in Holland only 30,000 workmen have any kind of unemployment insurance. The proportions for numerous cities practicing unemployment insurance vary through similar extremes. While, therefore, insurance against unemployment is being extensively practiced in Europe, yet the vast majority even of European workmen are still uninsured.

Great Britain. The National Insurance Act passed December, 1911, and effective July 15, 1912, contained provisions for compulsory insurance against unemployment of workers engaged in engineering trades, shipbuilding, building, and construction of vehicles. The law provided for a total premium of 6⅔ pence per worker insured, to be made up by employer and employee paying 2½ pence each, to which the State added 1⅔ pence, or one-third their total. The employer was made responsible for payment for himself and workers. The law provided also that a trade union or voluntary association of workers may insure themselves under the act and the government would refund one-sixth of their unemployment benefits. Registration was begun July 15, 1912, and the first premiums were paid Jan. 15, 1913. By Jan. 1, 1914, there were 2,508,939 persons insured under compulsory sections, including about 100,000 boys and 10,000 women and children. Under the voluntary plan, 172 unions with 376,041 members were insured. The total was, therefore, nearly one-fifth of all workers in Great Britain and Ireland. Nevertheless the act is not considered by any means a final solution of the unemployment evils of low paid casual labor or of the extensive unemployment among young persons. The benefits paid during the first 6 months were £236,458. The total funds collected in 1913–14 were £2,300,000, of which the State subsidy equaled £600,000. The balance in the fund was £1,600,000. The administration expenses have been about 10 per cent of the total outlay.

UNEMPLOYMENT INSURANCE. See UNEMPLOYMENT.

UNION COLLEGE. An institution for higher education, founded at Schenectady, N. Y., in 1795. The enrollment in all departments in the autumn of 1914 was 474, the faculty numbered 38, and was increased during the year. There were no noteworthy benefactions received. The productive funds of the college amount to about $950,000, and the income from all sources to about $115,000 annually. The library contains about 43,000 volumes. The president is Rev. C. A. Richmond, D.D.

UNITARIANS. The latest available statistics for this denomination are for 1906, at which time there were 70,542 communicants, 477 churches, and 531 ministers. The administrative body is the American Unitarian Association which has headquarters in Boston. The denomination is active in distributing literature and in organizing conferences for the promulgation of Unitarian thought. The social work is carried on by the Department of Social and Public Service, created in 1908. This department conducts a Bureau of Council and Information, promotes lecture courses in the churches, and has also organized a lending library, but its most notable work has been the publication of a series of pamphlets on various social service topics, which are a distinct contribution to the literature of the question. The Unitarian Fellowship for Social Justice is an unofficial organization which urges the denomination in the direction of the Christian reconstruction of the social order. Divinity schools of the church are maintained at Cambridge, Mass., Meadville, Pa., and Berkeley, Cal. Missionary work is carried on at many points among Icelandic, Norwegian, and Swedish immigrants of the United States. Among the publications are the *Christian Register*, published in Boston; the *Unitarian Advance*, published in New York; and the *Pacific Unitarian*, published in San Francisco. The president of the American Unitarian Association is Rev. Samuel A. Eliot, and the secretary is Rev. Lewis G. Wilson.

UNITED BRETHREN. See MORAVIANS.

UNITED KINGDOM. See GREAT BRITAIN.

UNITED PRESBYTERIAN CHURCH OF NORTH AMERICA. This denomination was founded in 1853 by a union of associate and associate reformed churches. For several years negotiations leading to a union of this denomination with the Presbyterian Church in the United States have been under way. The denomination in 1914 included 148,220 communicants, 1126 churches, and 1167 ministers. There are 13 synods and 72 presbyteries. Missions are maintained in India, Egypt, and the Sudan.

UNITED STATES. POPULATION. The estimated population of the United States on July 1, 1914, was 109,201,992. Of continental United States the estimated population on the same date was 98,781,324, compared with a population of 91,972,266 on April 15, 1910. The population of the several States and territorial possessions will be found in the articles dealing with them.

AGRICULTURE. General statistics for agriculture in 1914 for the United States and its dependencies will be found in the articles dealing with agriculture and agricultural products. The section *Agriculture* in each State article gives the acreage, production, and value of the principal crops. For foreign agricultural statistics, see the agricultural sections under the various countries. See also the articles AGRICULTURE; AGRICULTURAL EDUCATION; HORTICULTURE; IRRIGATION; etc.

MANUFACTURES. Manufacturing statistics for 1914 will be found in the articles dealing with the chief industries as COTTON, TEXTILE MANUFACTURING, STOCK RAISING, WOOL, etc.

MINERAL PRODUCTION. The general article MINERAL PRODUCTION IN THE UNITED STATES gives the production of all metals and minerals in 1913. Under each State will be found a section giving the mineral production of that State in 1913, and in 1914 when possible. For the mineral production of foreign countries, see sections under those countries. See also the articles on the various minerals.

EDUCATION. For information in regard to educational matters in 1913, see the article EDUCATION IN THE UNITED STATES, and for notes on higher and professional education, see UNIVERSITIES AND COLLEGES. In the article on each State and Territory will be found a paragraph dealing with educational statistics.

RELIGION. For information regarding the year's history of the various religious denominations, see the articles on the respective denominations. General information relating to religious bodies in 1914 will be found in the article RELIGIOUS DENOMINATIONS AND MOVEMENTS.

FOREIGN COMMERCE. Statistical tables relating to the foreign commerce of the United States in 1914 are given on pages 717–719. Table I is a summary for the calendar year, giving in detail by countries the total imports and exports in 1913–14. Table II is a general summary of the foreign commerce for the fiscal years 1913–14. Tables III and IV give, respectively, the chief articles of import and export for the calendar years 1913–14.

Commerce and the War. The effects of the war on international commerce, when viewed as a whole by the returns for the calendar year, do not appear to have been as serious as they really were. Thus the total imports from all countries for the calendar year 1914 were hardly less than in 1913. The figures for the former year are $1,789,276,001, while for the calendar year 1913 they were $1,792,596,480. The difference in the exports for the corresponding periods of the two years, although greater, does not as a whole show an alarming situation. The total for 1914 was $2,113,624,050, while the total for 1913 was $2,484,018,292. A more striking presentment of the effects of the war on commerce will be found by making a comparison of the imports and exports for June and December in 1913 and 1914, that is, for the last month of the fiscal and calendar years. The figures for

June show a normal condition, while those for December, 1914, show effects of the war on American commerce. In June, 1914, the imports totaled $157,529,450, but in December, 1914, they had fallen to $114,656,545. The comparison between December, 1913, and December, 1914, shows even greater difference, as in December, 1913, the imports amounted to $184,025,571. A comparison of the export trade for June, 1914, and December, 1914, shows a great increase in the latter month. In June, 1914, the exports amounted to $157,072,044, while in December, they had reached a total of $245,632,558. In December, 1913, the exports were $233,195,628. From these figures it appears that while the import trade suffered considerable decline on account of the war, the export trade, due to the demand for products in belligerent countries, showed a great increase.

Of still greater interest is a comparison of trade with Europe in these respective periods. The total imports from European countries in the calendar year 1914 amounted to $783,517,509, compared with $864,666,103 in the calendar year 1913, a decrease of over $75,000,000. The total imports from European countries for the fiscal year 1914 was $894,602,868, which was practically the same as that for the fiscal year 1913. Exports to European countries in the calendar year 1914 amounted to $1,339,295,916, compared with $1,549,573,363 for the calendar year 1913, a loss of over $160,000,000. Again we make the comparison between the months of June and December. In June, 1914, the total imports from European countries was $69,100,120, while in December they had fallen to $44,955,265. The exports in June, 1914, to European countries amounted to $90,310,794, while in December, 1914, they had increased to $190,201,330. The exports in December, 1913, amounted to $156,668,211, and in June, 1913, to $82,088,799.

It will be interesting to note the effect of commerce conditions in the countries at war in relation with the United States. Taking them in their alphabetical order, we find that imports from Austria-Hungary in December, 1913, amounted to $1,977,836; in December, 1914, they were $1,226,194. The exports in December, 1913, to Austria-Hungary, amounted to $3,162,652, while in December, 1914, they had fallen to $2700. The imports from Belgium in December, 1913, amounted to $3,043,076; in December, 1914, they had fallen to $396,676. The exports to Belgium in December, 1913, amounted to $7,740,512, but they had fallen in December, 1914, to $758,282. The imports from France in December, 1913, amounted to $17,553,751; in December, 1914, they had fallen to $6,025,647. The exports in December, 1913, were $18,341,017; they had risen in December, 1914, to $37,585,679. The imports from Germany in December, 1913, amounted to $18,272,085; in December, 1914, they had fallen to $8,680,428. The exports in December, 1913, were $33,210,285, and in December, 1914, these had fallen to $2,194,035. The imports from Russia in December, 1913, were $2,512,754; in December, 1914, $7448. The exports to Russia in December, 1913, were $4,971,120; in December, 1914, $479,429. The imports from the United Kingdom in December, 1913, were $28,597,188; in December, 1914, they had fallen to $14,937,749. The exports to the United Kingdom in December, 1913, were $61,092,740; in December, 1914, they had risen to $83,863,254.

It is interesting also to consider the effect of the war on the commerce between neutral European countries and the United States, in which it will be found that for the most part there has been a great increase. In the calendar year 1913 the imports from Denmark totaled $2,466,910, and in 1914, they were $3,844,827. The exports to Denmark in the calendar year 1913 amounted to $18,617,058, and they had risen to $41,945,344 in the calendar year 1914. The imports from Italy were practically unchanged in the two years, but exports showed a great increase in 1914. In 1913 there were exported to Italy goods to the value of $78,675,043, and this increased in 1914 to $97,932,200. The Netherlands, contrary to conditions in other countries, showed a decrease in exports, while imports remained practically the same. While the exports to the Netherlands from the United States in 1913 amounted to $121,552,038, they had fallen in 1914 to $100,743,803. Imports from Sweden were practically the same in the two years, but exports increased from $13,586,596 to $30,961,285 in 1914.

An examination of the exports of certain commodities for the calendar year will give interesting results as shown in the tables III and IV below. More instructive, however, is a comparison of figures for the last month of the year. The total export of foodstuffs in December, 1914, was $55,860,209, compared with $11,149,600 in December, 1913. Wheat exports in December, 1914, aggregated 28,875,217 bushels, compared with 5,724,027 bushels in December, 1913. Corn exports in December, 1914, amounted to $4,582,006, compared with $749,124 in December, 1913. Fresh beef in December showed a total export of 6,594,348 pounds, compared with 524,430 pounds in December, 1913. Pickled and salted beef doubled in quantity of export. Cotton was one of the products most discussed in relation to export trade. In December, 1914, there were exported 1,202,115 bales of cotton, valued at $49,340,720, compared with 1,230,830 bales, valued at $81,953,499 in December, 1913. The exports of cotton for the calendar year show an even greater falling off, as in the calendar year 1913 there were exported 8,609,588 bales, valued at $575,488,090, compared with 6,320,485 bales, valued at $343,904,905 in 1914.

Of rather gruesome interest is the comparison of the exports of explosives, including cartridges, dynamite, gunpowder, etc. In December, 1914, these commodities were exported to the value of $2,170,387, compared with a value in December, 1913, of $885,658, the total exports of explosives for the calendar year 1914 being $10,037,587, compared with $5,525,077 in the calendar year 1913. Copper was declared conditional contraband and the restrictions are reflected in the exports for the year, as in December, 1913, copper was exported to the value of $12,666,621, while in December, 1914, it had fallen to $7,073,182, and for the calendar year 1914 the total exports of copper were $117,188,350, compared with $144,909,117 in 1913. Iron and steel manufactures also showed a marked falling off, as in 1913 the total value of these exported was $294,435,060, while in 1914 they had fallen to $199,861,684, or a decrease of nearly $100,000,000. The imports of iron and steel for the calendar year 1914 were $28,615,344, compared with a value of $33,601,985 in 1913. For a comparison of the exports and imports of other commodities for the years 1913–14 consult tables III and IV.

In general the commerce from the grand divisions, excluding Europe, showed comparatively little change as regards imports, but quite material decreases of exports. The import trade from North America increased from $389,814,744 in 1913 to $441,400,758 in 1914. With South America there was an increase from $198,259,005 in 1913 to $229,520,375 in 1914. The import trade with Asia and Oceania was practically the same, while that with Africa showed a falling off of about $3,000,000. The export trade with North America countries showed a decrease from $601,176,159 in 1913 to $481,588,221 in 1914. The South American trade fell off from $146,514,635 in 1913 to $91,013,339 in 1914. The export trade with Asia and Oceania suffered a decrease from $207,825,327 in 1913 to $176,402,751 in 1914. The African trade showed a decrease of about $3,000,000 in 1914.

Commerce with Noncontiguous Possessions. The exports from the United States to Alaska in the calendar year 1914 were valued at $21,100,775, compared with a value of $21,097,040 in 1913, and the imports from Alaska in the same period amounted to $24,255,189, compared with $21,601,413 in 1913. The exports to Hawaii in the calendar year amounted to $21,473,230 and the imports from Hawaii to $47,086,271 in 1914, compared with $40,143,953 in 1913. To Porto Rico were sent in 1914 goods valued at $29,927,274, compared with $32,866,652 in 1913, and there were received from that island goods valued at $35,163,781, compared with a value of $39,637,332 in 1913. Exports to the Philippines in 1914 were valued at $22,797,400, compared with a value of $27,904,727 in 1913, and products were received from the islands valued at $23,611,809 in 1914, compared with a value of $17,913,173 in 1913.

Imports and Exports of Gold and Silver. The total imports of gold in ore, bullion, and coin in the calendar year 1914 amounted to $57,387,741, and the exports of gold amounted to $222,616,156, leaving an excess of exports of $165,228,415. The imports of silver in ore, bullion, and coin for the calendar year were valued at $25,959,187 and the exports to $51,603,060, leaving an excess of exports of $25,643,873.

TABLE I

FOREIGN COMMERCE BY COUNTRIES IN THE CALENDAR YEARS 1913 AND 1914

	Imports		*Exports*	
Countries	*1913*	*1914*	*1913*	*1914*
	Dollars	*Dollars*	*Dollars*	*Dollars*
Europe:				
Austria-Hungary	19,083,392	15,688,880	22,244,599	12,801,195
Belgium	41,458,376	30,362,019	64,317,469	34,771,028
Denmark	2,466,910	3,844,827	18,617,058	41,945,344
France	138,983,883	104,215,131	158,922,526	170,104,041
Germany	184,211,352	149,889,866	351,930,541	158,294,986
Greece	3,256,038	4,054,919	1,102,289	3,796,142
Italy	55,322,304	55,207,274	78,675,043	97,982,200
Netherlands	37,688,809	37,499,623	121,552,038	100,743,803
Norway	3,412,129	11,976,758	9,255,868	19,635,207
Portugal	6,351,678	5,900,970	5,251,589	3,949,106
Russia in Europe	22,322,957	12,806,834	25,965,351	22,260,062
Spain	24,411,958	22,041,006	30,773,476	27,815,504
Sweden	11,875,403	11,715,316	13,586,596	30,961,285
Switzerland	24,361,740	21,513,025	836,182	769,612
Turkey in Europe	10,019,001	7,948,495	2,244,255	1,738,157
United Kingdom	271,954,987	287,391,443	590,782,398	599,812,295
Total Europe	864,666,103	733,517,509	1,499,573,363	1,339,295,916
North America:				
Bermuda	459,159	687,985	1,361,628	1,568,249
British Honduras	1,788,786	1,717,684	1,526,689	1,619,211
Canada	142,127,982	164,031,910	403,191,392	310,616,232
Central American States:				
Costa Rica	3,458,069	3,353,425	3,516,700	3,044,575
Guatemala	3,413,514	4,594,890	3,366,596	3,127,117
Honduras	3,314,229	2,751,497	3,758,179	5,600,667
Nicaragua	1,668,403	1,449,746	2,883,026	2,306,301
Panama	4,664,746	4,473,456	24,368,022	20,974,981
Salvador	1,470,322	1,390,056	2,270,964	1,817,843
Total Central American States	17,989,283	18,013,070	40,163,487	36,871,484
Mexico	81,735,484	86,280,966	48,052,137	33,211,175
Newfoundland and Labrador	1,255,504	1,521,930	5,569,749	5,258,646
West Indies:				
British—				
Barbados	369,497	442,396	1,465,404	1,262,727
Jamaica	5,052,591	6,962,226	5,182,971	4,723,859
Trinidad and Tobago	6,681,974	5,605,993	3,301,620	3,341,515
Other British	1,747,781	1,530,103	3,128,289	2,975,119
Cuba	125,093,740	146,844,576	73,283,834	67,881,768
Danish	31,439	295,203	918,065	837,534
Dutch	562,505	546,246	838,022	1,019,777
French	75,420	74,746	1,841,077	2,087,347
Haiti	810,201	1,171,649	5,698,155	3,841,154
Santo Domingo	3,991,794	5,582,630	5,574,495	4,370,102
Total West Indies	144,416,942	169,055,768	101,231,932	92,340,902
Total North America	389,814,744	441,400,758	601,176,159	481,588,221

Countries	*Imports* 1913	*Imports* 1914	*Exports* 1913	*Exports* 1914
	Dollars	*Dollars*	*Dollars*	*Dollars*
South America:				
Argentina	25,575,667	56,274,246	54,980,415	27,127,958
Bolivia	398	172	962,459	805,876
Brazil	100,947,785	95,000,622	39,901,203	23,275,894
Chile	29,558,828	24,238,713	16,616,912	13,627,618
Colombia	15,714,447	17,547,987	7,647,165	5,784,275
Ecuador	3,462,567	8,855,916	2,821,646	2,504,014
Falkland Islands	....	1	467	1,294
Guiana:				
British	98,045	222,969	1,630,244	1,812,684
Dutch	818,825	1,034,508	781,806	655,244
French	81,821	....	818,798	282,430
Paraguay	67,220	61,198	215,058	82,595
Peru	10,824,587	11,269,941	7,608,916	5,876,487
Uruguay	1,860,609	9,597,168	7,617,110	4,153,433
Venezuela	9,808,761	10,916,934	5,462,441	5,023,532
Total South America	198,259,005	229,520,875	146,514,635	91,013,339
Asia:				
Aden	1,697,241	1,556,045	1,886,927	677,198
China	40,811,969	37,208,989	26,844,184	21,279,364
Chosen	4,912	7,537	1,173,744	1,354,580
East Indies:				
British—				
British India	70,860,612	63,083,948	10,966,051	10,379,066
Straits Settlements	31,851,678	24,631,610	4,263,274	3,667,863
Other British	12,853,612	10,948,836	584,131	452,260
Dutch	4,995,150	6,451,254	3,358,164	2,741,073
Hongkong	3,474,840	2,664,136	11,085,608	9,258,542
Japan	98,985,957	105,696,252	62,499,819	41,750,979
Persia	1,968,719	1,540,918	3,126	471,969
Russia in Asia	2,054,113	2,268,063	944,856	5,696,275
Siam	165,422	188,655	786,345	674,982
Turkey in Asia	12,127,837	10,611,188	1,884,990	780,489
Other Asia	110,806	66,647	....	....
Total Asia	281,407,868	266,864,028	126,122,651	99,193,210
Oceania:				
British Oceania:				
Australia and Tasmania	10,420,058	18,452,386	48,778,819	45,024,718
New Zealand	4,928,779	4,906,858	8,594,688	8,128,395
Other British	176,782	181,122	254,970	208,731
French Oceania	1,276,629	1,144,318	965,406	882,481
German Oceania	4,089	15,872	209,066	172,816
Philippine Islands	17,918,178	23,611,809	27,904,727	22,797,400
Total Oceania	34,719,505	48,312,360	81,702,676	77,209,541
Africa:				
British Africa:				
West	556,811	447,604	3,492,735	3,231,416
South	3,066,349	1,805,419	15,986,676	12,086,872
East	830,069	622,909	939,720	327,045
Canary Islands	165,298	111,628	584,717	888,524
Egypt	17,249,585	15,041,988	2,167,941	2,063,633
French Africa	785,697	836,519	2,232,479	2,685,673
German Africa	435,580	109,771	582,324	413,336
Italian Africa	54,811	69,047	3,469	7,059
Morocco	119,354	122,918	77,568	43,825
Portuguese Africa	449,200	364,147	2,722,272	2,977,077
Total Africa	23,729,760	19,660,971	28,928,308	25,323,823
Grand total	1,792,596,480	1,789,276,001	2,484,018,292	2,113,624,050

TABLE II

IMPORTS AND EXPORTS FOR THE FISCAL YEARS 1913 AND 1914, BY GRAND DIVISIONS

Fiscal Years Ending June 30—	*Atlantic coast districts*	*Gulf coast districts*	*Mexican border districts*	*Pacific coast districts*	*Northern border districts*	*Interior ports*	*Total*
				IMPORTS			
1913	$1,375,849,835	$103,612,409	$27,059,560	$128,895,064	$153,612,547	$23,978,819	$1,813,008,234
1914	1,374,620,578	120,372,034	32,802,909	138,151,367	205,278,412	22,705,357	1,893,925,657
				EXPORTS			
1913	$1,348,811,800	$543,076,378	$24,902,645	$146,856,469	$401,997,518	$239,339	$2,465,884,149
1914	$1,304,108,797	$566,387,662	$16,630,369	136,248,148	341,183,200	25,972	2,364,579,148

TABLE III

CHIEF ARTICLES OF IMPORT, CALENDAR YEARS 1913 AND 1914

IMPORTS

Articles	*1913*	*1914*
Art works	$35,058,730	$22,109,958
Chemicals, drugs, and dyes	101,292,697	87,675,573
Coffee	104,671,501	104,794,319
Copper, and manufactures of	44,479,568	27,974,533
Cotton, manufactures of	65,359,542	60,312,913
Earthen, stone, and chinaware	10,608,998	9,552,529
Fibres:		
Manufactures of	80,310,586	74,473,836
Unmanufactured	50,789,957	49,122,495

Articles	*1913*	*1914*
Fish	17,684,002	19,081,951
Fruits, including nuts	48,804,548	49,772,047
Furs, and manufactures of	7,802,234	8,685,866
Hides and skins other than fur skins	105,878,861	112,819,501
India rubber and gutta percha and crude	84,901,590	74,698,832
Iron and steel, and manufactures of	88,601,985	28,615,844
Precious stones	46,460,608	19,764,987
Leather, and manufactures of	19,714,008	25,226,271
Oils	45,890,821	40,090,498
Silk:		
Manufactures of	31,776,210	29,960,140
Unmanufactured	92,815,211	92,571,818
Spirits, wines, and malt liquors	20,882,258	16,619,875
Sugar	97,129,471	127,218,884
Tea	16,404,298	17,775,979
Tin, in bars, blocks, or pigs	46,900,224	82,861,183
Tobacco, unmanufactured	86,320,964	84,772,047
Wood, and manufactures of	61,067,658	68,174,612
Wool:		
Manufactures of	17,851,428	44,100,858
Unmanufactured	28,776,274	58,805,578

TABLE IV
CHIEF ARTICLES OF EXPORT, CALENDAR YEARS 1913 AND 1914

EXPORTS

Articles	*1913*	*1914*
Agricultural implements	$35,458,648	$21,649,528
Animals	7,071,055	20,419,257
Automobiles	38,300,567	34,171,568
Breadstuffs	208,391,856	310,280,878
Chemicals, drugs, dyes, and medicines	26,787,207	28,986,842
Coal	67,209,514	54,315,975
Copper, and manufactures of	144,909,117	117,188,850
Cotton:		
Manufactures of	55,586,267	50,092,998
Unmanufactured	575,488,090	348,904,905
Fertilizers	11,668,835	8,082,879
Fish	11,845,588	11,222,990
Fruits, including nuts	33,708,695	29,585,503
Iron and steel, manufactures of, not including ore	294,485,060	199,861,684
Leather, and manufactures of	59,994,678	....
Mineral oils	149,816,409	139,900,587
Meat and dairy products	157,486,469	161,474,241
Naval stores	22,250,485	18,798,088
Oil cake and oil cake meal*	27,761,624	22,047,883
Paper, and manufactures of	21,174,217	20,118,920
Paraffin and paraffin wax	8,176,881	6,434,881
Seeds	2,284,896	8,283,748
Tobacco:		
Manufactures of	6,755,910	6,982,682
Unmanufactured	52,937,890	48,908,864
Vegetable oils	21,088,089	16,896,710
Wood, and manufactures of	114,777,518	74,965,170

* Not including corn oil cake.

RECEIPTS AND DISBURSEMENTS. The following table, compiled from figures given by the Secretary of the Treasury, shows the receipts and disbursements of the Federal government for the fiscal years 1913 and 1914:

Receipts

	1913	*1914*
Customs	$ 318,891,895.36	$ 292,320,014.51
Internal revenue:		
Ordinary	309,410,665.81	308,659,732.56
Corporation and income taxes	35,006,299.84	71,381,274.74
Sales of public lands	2,910,204.69	2,571,774.77
Miscellaneous	57,892,663.64	59,740,870.18
Ordinary receipts	724,111,229.84	734,673,166.71
Public debt receipts	23,400,850.00	23,021,222.50
Total, exclusive of postal	747,512,079.84	757,694,389.21
Postal revenue	266,619,525.65	287,934,565.67
Total, including postal	$1,014,131,605.49	$1,045,628,954.88

Disbursements

	1913	*1914*
Civil and miscel.	$ 169,802,304.68	$ 170,580,285.45
Postal deficiency	1,027,868.79	....
War Department	160,387,452.85	173,522,804.20
Navy Department	133,262,861.97	139,682,186.28
Indians	20,306,158.90	20,215,075.96
Pensions	175,085,450.29	173,440,231.12
Int. on public debt	22,899,108.08	22,863,956.70
Ordinary disbursements	682,770,705.51	700,254,489.71
Panama Canal disbursements	41,741,258.03	34,826,941.76
Public debt disbursements	24,191,610.50	26,961,827.00
Total, exclusive of postal	748,708,574.04	762,042,758.47
Postal expenditures	262,108,874.74	283,558,102.62
Total, including postal	$1,010,812,448.78	$1,045,600,861.09
Excess of receipts	$ 3,319,156.71	$ 28,093.79

NATIONAL DEBT. The amount and classification of the United States national debt at the end of the calendar years 1912, 1913, and 1914 were as follows:

	Dec. 31, 1912
Interest-bearing debt at from 2 to 4 per cent and redeemable from 1908 to 1961, inclusive	$ 964,631,630.00
Debt on which interest has ceased since maturity	1,695,070.26
Debt bearing no interest	874,783,081.90
Gross debt	1,841,059,782.16
Cash balance in general fund	143,576,381.22
Net debt	$1,197,483,400.94

	Dec. 31, 1913	*Dec. 31, 1914*
Interest bearing debt	$ 966,823,490.00	$ 968,825,550.00
Debt on which interest has ceased	1,641,720.26	1,518,670.26
Debt bearing no interest	870,797,255.40	868,778,399.40
Aggregate	1,839,262,465.66	1,339,122,619.66
Certificates and Treasury notes	1,607,771,969.00	1,450,584,869.00
Gross debt	2,947,034,434.66	2,789,707,488.66
Cash in Treasury:		
Currency trust funds	1,607,711,969.00	1,450,584,869.00
Gold reserve fund	150,000,000.00	151,988,820.11
Net balance, general fund	111,854,317.93	66,770,674.65
National Bank notes, redemption fund (included in public debt under requirement of act of Congress, July 14, 1890)	17,209,266.00	15,192,433.00
Total	$1,886,885,552.93	$1,684,586,796.76
Net debt	$$1,060,198,881.73	$1,115,170,691.90

The receipts and disbursements for the fiscal year ending June 30, 1915, are estimated by the Secretary of the Treasury in his annual reports as follows:

Receipts

Customs	$270,000,000	$220,000,000
Internal revenue	312,000,000	359,000,000
Corporation and income taxes	95,000,000	80,000,000
Miscellaneous	59,000,000	69,000,000
Total ordinary receipts	$736,000,000	$728,000,000

Disbursements

Civil establishment	$177,000,000	$189,000,000
War Department	170,000,000	168,000,000
Navy Department	136,000,000	140,000,000
Indian service	21,000,000	21,000,000
Pensions	175,000,000	169,000,000
Interest on the public debt	22,900,000	23,000,000
Total ordinary disbursements	$701,900,000	$710,000,000
Surplus for 1915 in ordinary receipts	$ 34,100,000	$ 18,000,000
Panama Canal disbursements	41,000,000	28,000,000
Miscellaneous redemptions of the public debt	....	....
Total estimated deficit	$ 6,900,000	$ 10,000,000

Coinage. The coinage executed at the mints of the United States during the calendar year 1914 was as follows:

COINAGE EXECUTED AT THE MINTS OF THE UNITED STATES DURING THE CALENDAR YEAR 1914

Denomination	*Pieces*	*Value*
Double eagles	2,046,820	$40,926,400.00
Eagles	702,550	7,025,500.00
Half eagles	757,125	3,785,625.00
Quarter eagles	688,117	1,720,292.50
Total gold	4,194,112	53,457,817.50
Half dollars	1,116,610	558,305.00
Quarter dollars	9,554,610	2,388,652.50
Dimes	31,368,655	3,136,865.50
Total silver	42,039,875	6,083,823.00
Five cents	28,047,738	1,402,386.90
One cent	80,568,432	805,684.32
Total minor	108,616,170	2,208,071.22
Total coinage	154,850,157	$61,749,711.72

Coinage executed for Philippine Islands' Government, 6,975,500 pieces.

Coinage executed for the following foreign governments:

San Salvador, 7,000,080 (5c and 10c silver pieces).
Costa Rica, 859,425 (50c, 10c and 5c silver pieces).
Ecuador, 2,500,000 pieces.

The circulation statement, given in the accompanying table so entitled, is from figures compiled by the Treasury Department, and published Jan. 2, 1915.

Army. The regular army of the United States on June 30, 1914, consisted of 4701 officers and 87,781 men. In the latter total are included the quartermaster corps of 3809 men and the hospital corps of 4065. Of the total number, 758 officers and 17,901 men belong to the Coast Artillery, and are therefore practically stationary in coast defenses; 1008 officers and 18,434 men belong to the staff, technical, and noncombatant branches of the army, including recruits and men engaged in recruiting. Deducting these, the mobile army, so-called, was composed of 2935 officers and 51,446 men. On the date mentioned the troops were disposed of approximately as follows: In the Philippines, 3½ regiments of infantry, 2 regiments of cavalry, 1 regiment of field artillery, 2 companies of engineers, and 11 companies of coast artillery, aggregating in strength 9572. In the Hawaiian Islands were 3 regiments of infantry, 1 regiment of cavalry, 1 regiment of field artillery, 1 company of engineers, 8 companies of coast artillery, an aggregate strength of 8195. In the Canal Zone were 1 regiment of infantry and 3 companies of coast artillery, aggregating 2179. There were in China 2 battalions of infantry with a strength of 849, and in Alaska 1 regiment of infantry, numbering 862. There were in Vera Cruz 4 regiments of infantry, 2 troops of cavalry, 1 battalion of field artillery, and 1 company of engineers, an aggregate strength of 4090. In Porto Rico was a 2-battalion regiment of infantry, with a strength of 707. There were in the United States 17 regiments of infantry, 11 10/12 regiments of cavalry, 3½ regiments of field artillery, an aggregate strength of 64,579. Troops in Vera Cruz were later in the year removed to the United States. Practically all the organizations in the United States proper are on what is known as a peace footing, which means that an infantry company, which upon a war footing should have 150 men, has 65 men; a cavalry troop, which upon a war footing should have 100 men, has 71 men; and an artillery battery, which upon a war footing should have 190 men, has 133 men. The coast artil-

CIRCULATION STATEMENT—JANUARY 2, 1915

	General Stock of money in the U. S.	*a Held in Treasury as assets of the gov'm't*	*Money in Circulation*	
	Jan. 2, 1915	*Jan. 2, 1915*	*Jan. 2, 1915*	*Jan. 2, 1914*
Gold coin (including bullion in Treasury)	$1,815,976,819	$216,893,851	$ 631,607,599	$ 633,940,156
Gold certificates b	....	47,257,120	e 920,717,749	1,027,977,519
Standard silver dollars	565,921,478	16,841,375	69,821,108	74,405,220
Silver certificates b	....	25,058,292	f 455,200,708	477,705,022
Subsidiary silver	184,533,627	20,670,681	163,862,946	164,269,940
Treasury notes of 1890	2,351,000	9,759	2,341,241	2,550,053
United States notes	346,681,016	36,268,000	310,413,016	340,040,870
Federal Reserve notes	17,199,225	....	d 17,199,225	....
National Bank notes	c 1,039,711,021	65,208,492	c 974,502,529	726,479,575
Total	3,972,378,686	427,207,570	3,545166,116	3,447,368,355

Population of continental United States January 2, 1915, estimated at 99,875,000; circuation per capita, $35.50.

a This statement of money held in the Treasury as assets of the government does not include deposits of public money in National Bank Depositaries to the credit of the Treasurer of the United States, amounting to $69,631,330.62. For a full statement of assets see Public Debt statement.

b For redemption of outstanding certificates an exact equivalent in amount of the appropriate kinds of money is held in the Treasury, and is not included in the account of money held as assets of the government.

c Includes additional circulating notes issued under authority of act of May 30, 1908, as amended by acts of December 23, 1913, and August 4, 1914.

d Amount issued Federal Reserve banks.

e Includes $11,952,800 in hands Federal Reserve agents for retirement Federal Reserve notes.

f Includes $800,000 in hands Federal Reserve agents for retirement Federal Reserve notes.

lery companies are always kept on a war footing of 104 men each.

During 1914 a large part of the army was occupied in actual field service at Galveston, Vera Cruz, the Mexican border, and in Colorado and Arkansas. See MEXICO; STRIKES.

In the last months of the year, largely as a reflection of conditions resulting from the war in Europe, there was a very general discussion as to the condition of the national defenses of the country. In Congress, Representative Gardner, of Massachusetts, introduced a resolution in December calling for a Congressional inquiry as to the condition of our defenses. A similar resolution was introduced in the Senate by Senator Lodge. The statements of Mr. Gardner and others as to the alleged inadequacy of the defenses and the unpreparedness of the military and naval forces, were the subject of many addresses and public meetings. At a meeting of prominent men in New York City a committee of 50 was appointed, and an organization, known as the National Security League, was formed to support the Gardner resolution and seek to promote an understanding of the conditions to which it relates. The House Committee on Rules refused a hearing on the Gardner resolution by a party vote of 5 to 3. It became known that President Wilson opposed the methods suggested by Mr. Gardner because he considered it an unwise way of handling questions which might create very unfortunate international impressions, but he declared that he was in favor of the fullest inquiry by the regular committees of Congress. Before these committees appeared many prominent army officers. That the question of the adequacy of the national defenses is a very important and real one was shown by the detailed treatment given to the subject by Secretary Garrison in his annual report, where, unlike President Wilson, Mr. Garrison treats the question as a very serious and pressing one. He points out that there were on hand at the time of the writing of his report a sufficient amount of small-arm ammunition and equipment, roughly speaking, to equip 500,000 men, the least number that would have to be called into the field in any large emergency. He states that there is nothing like a sufficient supply of artillery and artillery ammunition, and declares that it is imperative that the manufacture of artillery and ammunition should progress as rapidly as possible until a proper reserve has been obtained. Mr. Garrison does not advocate a large increase in the standing army. He would, however, increase the enlisted personnel by 25,000 men, which should bring up to full strength the existing units of the mobile army in the continental United States and thus supply a more adequate force. This increase would also afford training for the officers in command of such units as they must command in time of war and would prevent, as far as the regular army is concerned, the crowding of the ranks with raw levies which always disorganize and render inefficient the organizations into which they come. Still more important he considers the preparation of a reserve, and he declares that the present legislation with respect to such a reserve has proven utterly useless for the purpose, as in 24 months it produced only 16 men. The standing army, in his opinion, should be used as a school through which to pass men who come into it, with the knowledge that if they are proficient they can be discharged at any time after a year or 18 months.

There was a very marked decrease in the percentage of desertions in the regular army during the year.

NAVY. The enlisted men in the navy on June 30, 1914, numbered 52,667, or 4612 more than in 1913. For the first time in many years the enlistment was up to the limit prescribed by Congress.

The appropriations for the fiscal year 1914–15 for the naval establishment amounted to $140,233,716, exclusive of $4,635,000 appropriated from the proceeds of the sale of the battleships *Idaho* and *Mississippi* to Greece. Estimates submitted for the naval establishment for the fiscal year 1915–16 amount to $139,569,409, or $664,306 less than the appropriations for 1915. The building programme recommended by the Navy Department included 2 dreadnoughts, 6 destroyers, 8 submarines or more (1 to be of seagoing and 7 or more of coast-defense type), 1 gunboat, and 1 oiler. The General Board of the Navy made recommendations which provided for a much greater increase than the request of the Navy Department. This board recommended for the 1916 programme, 4 battleships, 16 destroyers, 3 fleet submarines, 16 coast submarines, 4 scouts, 4 gunboats, 2 oil-fuel ships, 1 destroyer tender, 1 submarine tender, 1 navy transport, 1 hospital ship, and 1 supply ship. In its report accompanying this recommendation the board points out that in November, 1914, there were 30 effective battleships, complete and ready for service less than 20 years old; there were 4 battleships under construction, 2 authorized in 1914, and 1 battleship to replace the *Idaho* and *Mississippi*,—making a total of 37 battleships either completed or provided for. According to the programme adopted by the board in 1903 providing for 2 battleships per year, the navy is now deficient 10 battleships, built, building, or authorized. The adoption of the recommendations made by the board for 1916 would bring up the number of battleships necessary to follow out the 2 battleships a year programme adopted in 1903. While in general the report of Secretary Daniels is optimistic as regards present and future conditions of the navy, that of the General Board indicates that that body considers the present situation leaves much to be desired in the way of preparedness and equipment.

During the fiscal year 1914 the effective force of the navy was increased by the completion of 2 battleships, the *Texas* and the *New York;* 8 torpedo boat destroyers; 10 submarine torpedo boats; 2 fuel ships; and 3 gunboats. The *Texas* and the *New York* were the first vessels to be armed with 14-inch guns, and they have a speed in excess of 21 knots. The three battleships authorized by the preceding session of Congress will carry a secondary battery so arranged as to be available for coast-defense against torpedo boat destroyers irrespective of any condition of weather. These battleships, to be named *California, Idaho,* and *Mississippi,* have been assigned and they will be known as the *California* class. The *California* will be constructed at the navy yard in New York and the other battleships at private yards. As noted above, the battleships *Idaho* and *Mississippi,* which had been largely outgrown, were sold to the government of Greece for $5,827,410, the sum thus obtained to be employed in the construction of one battleship. A recommendation made nearly every year for the creation of the rank of an admiral and vice admiral in the navy was again placed before Congress in 1914, and though it met with practically no serious opposition, no action had been taken at the end of the year. The navy saw active service in Mexico, in April, when 19 men were killed during the attack on Vera Cruz. The work of the marine corps was especially efficient. See MEXICO.

The discussion as to national unpreparedness, which is noted in the section given above, included also the navy. Several high naval officers testified before the House committees, and the evidence showed a disturbing condition in the preparedness of the navy for active service should the occasion arise. This feeling, as suggested above, was not shared by Secretary Daniels.

On April 5 Secretary Daniels issued an order forbidding the use of alcoholic liquors in the navy. For notes in regard to the relative strength of the United States navy, in comparison with foreign navies, see the article NAVAL PROGRESS.

POST OFFICE. The operations of the Post Office Department for the fiscal year 1914 showed a surplus amounting to approximately $3,600,000. The postal revenue for the fiscal year amounted to $287,934,565, an increase over the preceding year of slightly less than 8 per cent, and the expenditures amounted to $283,543,769.

Parcel Post. The most notable feature of the postal service during the year was the growth and development of the parcel post. There is reason to believe that the postal service has handled during the year more than 800,000,000 parcels. Statistics covering the first fifteen days of October, 1914, show a material increase over the number of parcels handled in April of the same year, notwithstanding the depressing effect of the European War. The original expectation of the advocates of the parcel post were that possibly 300,000,000 parcels would be handled during the first year. This increased volume of business has imposed upon the postal service many difficult problems in connection with the transportation and handling of mail, and has necessitated many improvements of equipment and changes in the method of handling parcels. These have been successfully made, expediting parcel business without delaying other mail. On July 1, 1913, the insurance fee on parcels was reduced from 10 cents to 5 cents. This action greatly stimulated the ordinary parcel traffic as well as the insured business and has met an important public need. During the fiscal year more than 13,000,000 parcels were insured, or more than twice the number sent by registered mail before the establishment of the parcel post.

On March 16, 1914, an order was issued changing the classification of books from third to fourth class, thus permitting books to be sent through the parcel post. Congress also passed a law permitting the shipment of seeds, bulbs, etc., by parcel post.

Railway Mail Service. The development of the railway post-office terminal system continued, and its operation rendered unnecessary large expenditures for railway post-office cars and railway clerks which would otherwise have been required. At certain post offices experiments with government-owned automobiles are being carried on.

The officers of the department continued their inquiry into a general question of a proper basis for fixing compensation for the transportation of the mails by railroads. A bill was introduced into the House providing for an adjustment of rates, but no action had been taken at the end of the year.

Foreign Mail Service. The volume of mail sent to foreign countries during the fiscal year 1914 increased materially over that dispatched during the previous year. On May 9, 1914, a parcel post service with Greece was inaugurated and a convention was concluded with the Republic of Liberia, effective July 1, 1914. Modifications were made in the parcel post conventions with the Bahamas, Barbados, British Honduras, Ecuador, Jamaica, and the Leeward Islands. During the year negotiations were in progress for conventions with Cuba, Argentina, China, Gibraltar, Portugal, Russia, Spain, and Switzerland.

Aërial Mail Service. During the fiscal year 1914 permission was given in eight instances authorizing experimental aërial mail service. In view of the importance of developing this method of transportation, an item was included in the 1916 estimates for $50,000 to provide for an experimental service, as it is believed that there are sections of the country where, because of topographical conditions, this service might be advantageously employed.

Postal Savings System. There was a steady and substantial growth in this system during the year. On June 30, 1914, the number of depositors was 388,511, and the amount on deposit was $43,444,271, a gain for the year of 57,505 depositors and $9,625,401 in deposits. The average principal per depositor increased from $102 to $111.82. Savings facilities were available at 9639 post offices, of which 8507 were of the presidential grade and 1132 fourth class, and at 708 branches and stations, making a total of 10,347 depositories in operation.

Rural Mail Service. This service was extended during the year to considerably more than 500,000 people, and nearly 900 rural routes, with an aggregate length of over 20,000 miles, were established. Additional demands upon the service for the transmission of farm products and a larger bulk of merchandise through the mails were met. There were over 23,000,000 patrons of the service in 1914.

PENSIONS. The total expenditure for pensions in 1914 was $172,417,546. From 1866 to 1913 there were paid out $4,461,094,380, making a total on June 30, 1914, of $4,633,511,926. There were on the pension roll at the beginning of the year 785,239 pensioners. The loss by death during the year was 33,639. During a rearrangement of the Revolutionary War archives the number of pensioners of the Revolution was counted and the total was found to be 72,284.

The number of cases considered by the Board of Review, during the fiscal year 1914, was 169,973, and of this number there were allowed 94,325. During the year there were issued 95,606 certificates. There were 369,624 survivors of the Civil War, 24,250 survivors of the Spanish War, and 170 widows of pensioners of the War of 1812 receiving pensions at the close of the fiscal year. There were 893 survivors of the War with Mexico, and 4699 widows of pensioners of that war, as well as 915 survivors of the Indian wars, and 2182 widows. In the regular army there were 14,919 invalids and 2892 widows receiving pensions.

Bureau of Mines. The Bureau of Mines carried on many interesting and important experiments during the year. Methods for extracting radium from the carnotite ores of Colorado and Utah were invented and applied. These resulted in greater efficiency than is attained by any foreign producer of radium at an indicated cost of less than one-third of the present selling price. The Bureau also developed the fact that the annual value of the by-products wasted in present methods of making coke in the United States amounts to $75,000,000. Investigations were carried on looking to the use of better methods of making coke and the upbuilding of by-product industries. Through an expenditure of not more than $15,000 in investigations and demonstrations, the Bureau was instrumental in saving natural gas valued at $15,000,000 during a period of 18 months. Investigations and experiments with a view of increasing efficiency in the petroleum industry were conducted. It is estimated that the preventable wastes and losses in the development of oil fields and in transporting and storing oil amount to fully $50,000,000 yearly. There were designed and demonstrated devices for arresting dust explosion in mines. Through the work of the Bureau many men were rescued after disasters, and over 8000 miners were trained in rescue or first-aid methods. The Bureau has been instrumental in greatly increasing the number of rescue and first-aid corps equipped and maintained by mining companies. Nearly 25,000 miners have received this training and more than 12,000 sets of rescue apparatus have been purchased by private companies.

Diplomatic Service. The outbreak of the war in Europe in August, 1914, brought to the ambassadors, ministers, and consular officers of the United States in the countries at war or affected by the war, serious duties, which were almost without exception admirably performed. The burdens fell with a special severity upon the embassies in London, Paris, and Berlin, and upon the American minister in Belgium. In London, Ambassador Page was confronted with a very serious situation resulting from the desire of thousands of Americans, who were in Europe at the time of the outbreak of hostilities, to reach their homes. To this were added financial difficulties which resulted from a temporary suspension of the use of credits and paper money. In Paris, Ambassador Herrick was retained after the outbreak of the war because of the remarkably efficient work which he had done toward improving the very serious conditions which confronted Americans and other foreigners in Paris. On June 12 the President appointed William G. Sharp ambassador to France, and he proceeded to Paris and willingly furnished efficient aid to Mr. Herrick. The latter returned to the United States in the latter part of the year and Mr. Sharp assumed the duties of the office. In Berlin, Ambassador Gerard was entrusted not only with affairs relating to American citizens, but took charge also of the diplomatic business of Germany and Great Britain on the retirement of the ambassadors of those nations following the declaration of war. His position was an extremely delicate one, but he fulfilled the duties in a manner which won the praise of the officials and public of all the European nations. Brand Whitlock, United States minister in Belgium, had perhaps the hardest tasks of any of the diplomatic representatives of the United States. He had general charge of the distribution of relief in Belgium, and labored ceaselessly to better the condition of the unfortunate citizens of that country.

The embassy to Russia was filled for the first six months of the year by Curtis Guild, of Massachusetts, appointed by President Taft. Henry M. Pindell, of Illinois, was in 1913 nominated by President Wilson to fill the post. The appointment was severely criticised as being in a large measure a reward for political activities, and it was alleged that Mr. Pindell had few of the qualifications for filling such an office and that he had been appointed largely as a result of political favors done to Mr. Bryan. Nevertheless, the Senate confirmed his appointment on January 26 and on the following day Mr. Pindell sent his resignation to President Wilson with the statement that he did not wish to embarrass the latter's administration by accepting the post. On July 1, George T. Marye, of California, was appointed ambassador to Russia. As noted above, William G. Sharp was appointed ambassador to France in June. During the year, bills were passed in Congress raising the rank of the diplomatic posts in Argentina and Chile to embassies. Frederick J. Stimson, of Massachusetts, was appointed first ambassador to Argentina, and Henry P. Fletcher, of Pennsylvania, who had previously held the post of minister to that country, became ambassador to Chile. On March 31, Osman Mizima Pasha, was appointed Turkish ambassador to the United States, but was later succeeded by A. Rustem Bey. The latter, on his arrival in the United States in August, indulged in severe criticism of the United States government, and soon after departed for Turkey, presumably not to return.

There were comparatively few changes among the ministers of the United States to foreign countries during the year. Arthur Bailly-Blanchard, former secretary of the embassy at Tokio, was appointed minister to Haiti. The President nominated Ira. N. Morris, of Chicago, minister to Sweden. George Fred Williams, minister to Greece, resigned in July, after a remarkable statement issued to the public criticising the methods of European powers in Albania (q.v.). Garrett Droppers was appointed minister to Greece to succeed Mr. Williams. The following table gives the list of ambassadors and ministers from the United States to foreign countries and from foreign countries to the United States.

AMBASSADORS

Country	*Accredited by United States*		*Accredited to United States*	
Argentina	F. J. Stimson, Mass.	1914	Rómulo S. Náon	1911
Austria-Hungary	Frederic C. Penfield, Pa.	1913	Konstantin Theodor Dumba	1912
Brazil	Edwin V. Morgan, N. Y.	1913	Domicio da Gama	1911
Chile	H. P. Fletcher, Pa.	1913	Eduardo Suáres	1911
France	W. G. Sharp, Ill.	1912	J. J. Jusserand	1903
Germany	James W. Gerard, N. Y.	1913	Johann Heinrich, Count von Bernstorff	1908
Great Britain	Walter Hines Page, N. Y.	1913	Sir Cecil Arthur Spring-Rice	1913

Country	*Accredited by United States*		*Accredited to United States*	
Italy	Thomas Nelson Page, Va.	1913	Count Vincenzo Macchi di Cellere	1914
Japan	George W. Guthrie, Pa.	1913	Viscount Sutemi Chinda	1912
Mexico			Don Manuel Calero	1912
Russia	George T. Marye, Cal.	1914	George Bakhméteff	1911
Spain	Joseph E. Willard, Va.	1913	Don Juan Riano y Gayangos	1913
Turkey	Henry Morgenthau, N. Y.	1913		
	MINISTERS PLENIPOTENTIARY			
Belgium	Brand Whitlock, O.	1913	E. Havenith	1911
Bolivia	John D. O'Rear, Mo.	1913	Ignacio Calderón	1904
China	Paul S. Reinsch, Wis.	1913	Kai Fu Shah	1914
Colombia	Thaddeus Austin Thompson, Tex.	1913	Don Julio Betancourt	1912
Costa Rica	Edward J. Hale, N. C.	1913	Roberto B. Mesén	1914
Cuba	William E. Gonzales, S. C.	1913	Carlos M. de Céspedes	1914
Denmark	Maurice F. Egan, D. C.	1907	Constantin Brun	1913
Dominican Republic	James M. Sullivan, N. Y.	1913	Eduardo R. Soler	1914
Ecuador	Charles S. Hartman, Mont.	1913	Dr. Don Gonzalo S. Córdova	1913
Greece *	Garrett Droppers	1914	L. A. Coromilas	1909
Guatemala	William H. Leavell, Miss.	1913	Joaquin Antonio Mendez	1912
Haiti	Arthur Bailly-Blanchard, Wis.	1914	Solon Menos	1914
Honduras	John Ewing, La.	1913	Dr. Alberto Membreno	1912
Netherlands †	Henry Van Dyke, N. J.	1913	W. L. F. C. Van Rappard	1913
Nicaragua	Benjamin L. Jefferson, Colo.	1913	Emiliano Chamorro	1913
Norway	Albert G. Schmedemann, Wis.	1913	H. H. Bryn	1910
Panama	William J. Price, Ky.	1913	Don Eusebius A. Morales	1913
Paraguay	Daniel J. Mooney, N. Y.	1909	Hector Velazquez	1913
Persia	John L. Caldwell	1914	Mehdi Khan	1914
Peru	Benton McMillin, Tenn.	1913	Federico A. Pezet	1912
Portugal	Thomas H. Birch, N. J.	1913	Viscount de Alte	1902
Rumania ‡	Charles J. Vopicka, Ill.	1913		
Salvador	Boaz W. Long, N. Mex.	1914	Don Francisco Duenas	1913
Siam			Phya Prabha Karavongse	1913
Sweden	Ira N. Morris, Ill.	1914	W. A. F. Ekengren	1912
Switzerland	Pleasant A. Stovall, Ga.	1913	Paul Ritter	1909
Uruguay	Nicolay A. Grevstad, Ill.	1911	Carlos María de Pena	1911
Venezuela	Preston McGoodwin, Okla.	1913	Santos A. Dominici	1914

* Accredited also to Montenegro. † Accredited also to Luxemburg. ‡ Accredited also to Servia and Bulgaria.

Federal Judiciary. There was only one change in the membership of the United States Supreme Court in 1914. In August the President appointed James C. McReynolds, Associate Justice, to fill the vacancy caused by the death of Justice Lurton. The membership of the court with the year of their appointment in parenthesis is given as follows: Chief Justice, Edward Douglas White of Louisiana (1910). Associate Justices: Joseph McKenna, California (1898); Oliver Wendell Holmes, Massachusetts (1902); William R. Day, Ohio (1903); Charles Evans Hughes, New York (1910); Willis Van Devanter, Wyoming (1910); Joseph R. Lamar, Georgia (1910); Mahlon Pitney, New Jersey (1912); James Clark McReynolds, Tennessee (1914).

The membership of the other Federal Courts in 1914 is given below:

Court of Claims. Chief Justice, Edward Kernan Campbell. Associate Judges: Charles Bowen Howry, Fenton Whitlock Booth, Samuel Stebbins Barney, George Wesley Atkinson.

Court of Customs Appeals. Presiding Judge, Robert M. Montgomery. Associate Judges: James F. Smith, Orion M. Barber, Marion De Vries, and George E. Martin.

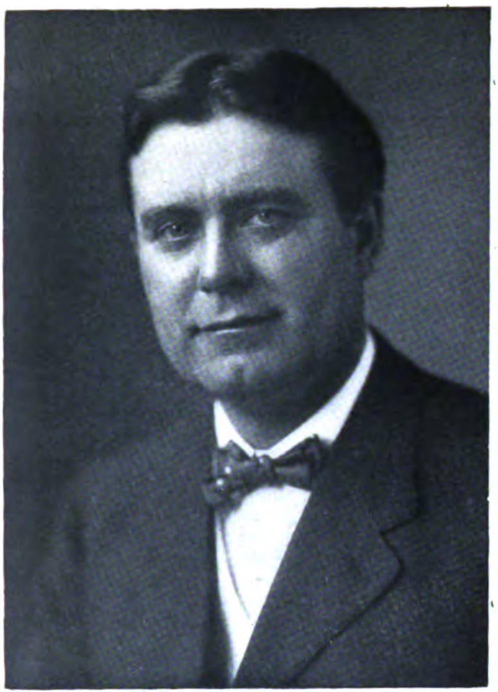
Circuit Courts. The Circuit Courts comprise nine judicial circuits, and in each of these a justice of the Supreme Court has jurisdiction. There are in addition other circuit judges for each of the circuits.

CONGRESS

The sessions of Congress included in this résumé are the first regular session of the Sixty-third Congress, which convened on Dec. 2, 1913, and the second or short session of this Congress which convened on Dec. 7, 1914. To make the narrative consecutive it will be necessary to include a short summing up of the proceedings of that part of the first session which took place in 1913. Upon the convening of Congress on Dec. 2, 1913, the President read his annual message, which was brief and occupied only thirty minutes for delivery. (See 1913 Year Book.)

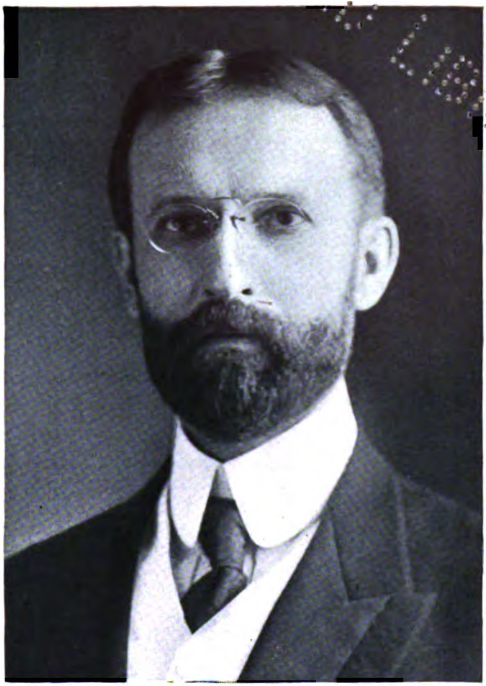
On December 3 the House passed the Hay Volunteer Army Bill providing for the raising of a volunteer army at the time of actual or threatened war to number 242,000 men, exclusive of militia or regulars. The Senate, on December 6, passed the Hetch-Hetchy Bill, providing for a water supply for San Francisco, by a vote of 43 to 25. It had already passed the House. Hearings were held in the Senate over the admission of Blair Lee, elected Senator from Maryland, and Frank P. Glass, who had been appointed Senator from Alabama to succeed Senator Johnston. Senator Blair was later admitted, while the Senate voted to exclude Mr. Glass. Congress then adjourned for the Christmas holidays.

Trust Bills. On January 20 Congress reassembled, and on the same day President Wilson read his message concerning additional anti-trust legislation. His recommendations included a prohibition of interlocking directorates of banks, railroads, industrial, commercial, and public service bodies; the passage of measures empowering the Interstate Commerce Commission to superintend and regulate the future capitalization of railroads; the passage of measures supplementing the Sherman law by explicit definitions of the practices of monopoly; the creation of an Interstate Trade Commission to form a clearing house for the facts in relation to business and to act as an instrument supplementary to the courts in doing justice to business monopolies; the passage of measures imposing penalties, not upon business itself, but upon individuals responsible for improper practices; the passage of measures prohibiting holding companies and restricting the interlocking owner-



Photograph by Moffett, Chicago

WILLIAM E. BORAH
IDAHO



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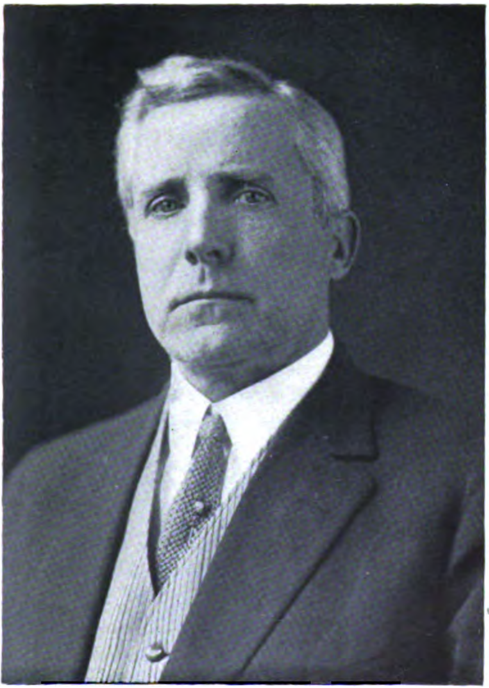
GEORGE SUTHERLAND
UTAH



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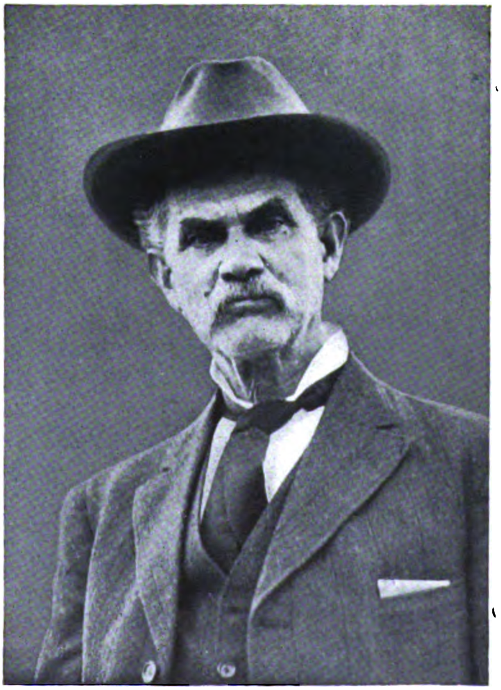
JAMES A. REED
MISSOURI



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JOHN SHARP WILLIAMS
MISSISSIPPI

FOUR UNITED STATES SENATORS PROMINENT IN 1914

ship of corporations by individuals; the passage of measures permitting private claimants to found suits for redress against monopolies under the Sherman law upon the results of government suits against those monopolies. President Wilson's address was received by Congress with the closest attention and his reading of it was frequently interrupted by hearty applause.

Bills embodying these recommendations had already been introduced into the House with the exception of the measure designed to supplement the Sherman act by defining practices and methods which are illegal, and providing for the supervision of all issues of railway stock and bonds, and this bill was introduced shortly after the President's address.

At a caucus held in the House on May 12 it was agreed to pass before adjournment only the three anti-trust measures and the annual appropriation bills. Debate began in the House on the anti-trust bills on May 19 and continued until June 5, when all three measures were passed. The bill creating an Interstate Trade Commission was adopted without a roll call. The Clayton Bill was passed by a vote of 275 to 54 and the Railway Capitalization Bill by a vote of 325 to 12. On July 1 the Democratic members of the Senate in caucus agreed to hold the Senate in session until the trust bills were disposed of. On July 22 the Clayton Anti-trust Bill was favorably reported with amendments in the Senate. On August 5 the Senate, by a vote of 53 to 16, passed the bill creating a Federal Trade Commission, 2 Democrats voting against the measure and 12 Republicans for it. On September 2 the Clayton Bill was passed in the Senate by a vote of 46 to 16, 7 Republicans and 1 Progressive Senator voting for it. On September 8 the Senate, by a vote of 43 to 5, agreed to the conference report on the Trade Commission Bill. The conference committees of the two Houses reached an agreement upon conditions of the Clayton Bill, and on October 5 the Senate adopted the report by a vote of 35 to 24. The report was adopted on October 8 in the House by a vote of 244 to 54. The conference report on the Anti-trust Bill resulted in a long and somewhat acrimonious debate led by Senator Reed of Missouri, who spoke for two days in opposition to the acceptance of the report which he asserted was a betrayal of the Democratic party. He complained because the criminal penalty for price discrimination, tying contracts, and holding companies had been stricken out, together with a provision authorizing the courts to appoint receivers and sell the property of convicted corporations. For a full discussion of these bills, see TRUSTS.

PANAMA CANAL TOLLS BILL. For a general discussion of this bill and its passage through Congress, see PANAMA CANAL TOLLS.

ALASKA RAILROAD BILL. This measure, which was one of those recommended in the President's message at the beginning of this session of Congress, is discussed in the article ALASKA.

WOMAN SUFFRAGE. An amendment to the Constitution providing for woman suffrage came to a vote in the Senate on March 19. It failed to pass that body by a vote of 35 to 34—two-thirds vote was required to pass the resolution. After its rejection Senator Shafroth, of Colorado, an advocate of woman suffrage, introduced another resolution requiring a popular vote on the question in any State when more than 5 per cent of the voters petitioned for it, but this resolution did not come to a vote during this session.

MEXICO. On April 20 both branches of Congress assembled in the House chamber and were addressed by the President on the Mexican crisis. On the same day the Senate passed the bill which had previously been passed in the House providing for the raising of a volunteer army in the time of actual or threatened war. The House resolution authorizing the President to use force in Mexico was adopted by a vote of 337 to 37. On April 21 a similar resolution with amendments was adopted in the Senate, which amendments were accepted by the House on the following day. For a discussion of the relations of the United States and Mexico during the year, see MEXICO.

CONGRESS AND THE WAR. Congress was prompt to respond to the emergency brought about by the war in Europe. (See WAR OF THE NATIONS.) On August 3 the House adopted a bill made to assist American trade interests in the European crisis by liberalizing existing laws so as to permit the immediate registry of foreign-built ships under certain conditions. There were previous to this time many ships, numbering about 150, with a total measurement of nearly 1,000,000 tons, owned by Americans under foreign flags. The bill as passed by the Senate admitted newly purchased and registered ships to coastwise trade, and authorized the President in an emergency so to admit them. There was an objection to the measure, and in a conference between the two Houses the provision objected to by a minority was made broader, authorizing all foreign-built ships admitted to American registry within two years to engage in the coastwise trade. The Senate rejected the conference committee's report, and, by a vote of 40 to 20, passed the bill in the form in which it had been submitted by the House. In this way the Senate rejected its own amendments and the changes reported by the conference committee, and the provisions permitting the newly registered foreign-built ships to enter the coastwise trade were lost. The rejection of these provisions was due mainly to the objections of the owners of coastwise ships and the shipyards, and the petitions of shipyard employees. The bill finally passed and signed was the House bill. To supplement this bill and to promote the transfer or purchase of ships, the government proposed the creation of a War Risk Insurance Bureau in the Treasury Department, with a fund of $5,000,000. A bill for such a bureau, favorably reported in the Senate and the House, was passed, and on August 21 the Senate adopted an emergency measure appropriating $5,000,000 to insure American vessels and their cargoes against loss by war. A similar bill was passed by the House on August 29. On September 4 both Houses assembled in the House chamber and were addressed by the President on the necessity of providing additional revenue to meet the deficit which would be created by the falling off of imports from the countries affected by the war.

On September 21 there was introduced into the House an emergency revenue bill, providing for the raising of $105,000,000 by special taxes on beer and wines, gasoline, brokers and bankers, tobacco dealers' license, on theatres in towns of more than 15,000, circuses and other shows, public billiard rooms, and bowling alleys. Checks, drafts, foreign bills of exchange, letters of credit, and leases of land or tenements are exempted from the stamp tax. The stamp taxes remain in force until December 31, 1915, but the others are to run until repealed. The House passed the War Revenue Bill on September 25, by a vote of 234 to 135, 1 Progressive voting with the majority, and 11 Democrats and the other Progressives joining with the solid Republican minority. An amendment to the War Revenue Bill, which led to a sharp contest, was offered by Senator Smith of Georgia. It provided for an issue of $250,000,000 in bonds, to be used by the government in buying 5,000,000 bales of cotton at ten cents a pound, the cotton to be held a year or two and then to be sold at a price not below eleven cents. The amendment also provided for a tax designed to reduce the planted area of cotton and the crop by one-half. After a long and somewhat bitter debate the amendment was rejected by a vote of 21 to 40. After many changes were made in the Senate the bill was passed on October 17 by a vote of 34 to 22. All the Republicans and 2 Democrats voted in the negative.

River and Harbor Bill. On September 18–19 there was conducted in the Senate one of the most remarkable filibusters known in the history of that body. This was carried on by Senator Burton of Ohio and Senator Kenyon of Iowa, and its purpose was the reduction of the appropriation carried by the River and Harbor Bill. As it was originally submitted to the Senate the bill carried appropriations of about $53,000,000. Efforts were made to strike out a large proportion of these appropriations in the Senate, but they failed because the Senators, whose constituents were thus threatened with disappointment, were determined to push the bill through to passage by keeping the Senate in continuous session till it was accomplished. Senator Burton proceeded to talk against the bill all one night and until 4 o'clock on the next afternoon. He was aided by other Senators and through their efforts Senator Simmons, who had the bill in charge, consented to have the amount carried by the bill reduced to $20,000,000, and to have the appropriation thus made used for the carrying on of existing projects.

Sixty-Third Congress—End of First Session. Congress adjourned on October 24 after a continuous session of 1 year, 6 months, and 17 days, this being the longest continuous session since the beginning of the government. The two Houses met in extraordinary session on April 7, 1913, sat through the summer and fall, and on December 1 the extraordinary session merged into the regular session without a break. Congress then sat all winter, all summer, and in the fall finally adjourned as noted above on Oct. 24, 1914, to meet again on December 1, for the regular short session. The continuous session was remarkable not only for its length, but for the fact that it signalized the return of the Democratic party to complete power, after sixteen years of opposition.

The European War made it necessary to pass four measures—the War Revenue Bill; an act admitting foreign-built ships to American registry; the War Risk Insurance Bureau Bill; the bill for large increases of emergency currency. Measures which would have been important but for the greater acts which overshadowed them were also enacted. These include a measure providing for the Federal construction and ownership of railways in Alaska; the use of Hetch-Hetchy Valley as a water supply for San Francisco; the regulation of dealing in cotton futures on cotton exchanges; leasing of Alaska coal lands; limitation to eight hours of women's labor in the District of Columbia; regulation and taxation of imports of opium; and the cutting down of the appropriation for rivers and harbors from $53,000,000 to $20,000,000. There were several subjects considered during the session, but not completed. These include the Seamen's Bill; the Nicaraguan and Colombian treaties; a measure providing for Federal owned merchant marine; Immigration Bill, with literacy test; a measure providing for Philippine government; several conservation measures dealing with water powers and mining lands; a bill providing for farm land banks; and a measure providing for Federal regulation of the Stock Exchange through the Post Office Department.

The Sixty-third Congress failed to carry out the promises made in the Democratic national platform in 1912 for a reduction of the expenditures of the government, and for this it was severely criticised not only by Republicans, but by Democratic leaders. (For the amount of appropriations made, see table below.)

Sixty-Third Congress—Second Session. The second or short session of the Sixty-third Congress convened on December 7, and on the following day the President delivered his annual address, which was short and from its tone was not only an address to Congress but also to the American people. President Wilson made few recommendations and urged no new legislation. The most important measures, the passage of which he recommended, related to the war in Europe. In the opinion of the President two things were necessary to meet the situation. First the resources of the country must be developed, and second a merchant marine must be created to distribute these resources to the markets which await them. To accomplish these purposes he recommended the passage of three measures pending in Congress. Two related to conservation and had already passed the House, and the third was the shipping bill providing for a government owned merchant marine. As a reason for passing this bill Mr. Wilson made these assertions: First, that goods cannot be carried to the empty markets that await them if no ships are available; second, ships will not be available if we wait for the trade to develop without them; third, "To retrace the steps by which we have, it seems almost deliberately, withdrawn our flag from the seas. . . . would take a long time" and much detailed legislation, "and the trade which we ought immediately to handle would disappear or find other channels while we debated the items"; fourth, the government must be enabled to open wide these gates of trade before it is altogether profitable to open them, or altogether reasonable to ask private capital to open them at a venture; fifth, the government should provide shipping facilities where to provide them would not be at first profitable, and should withdraw when the project has become sufficiently profitable to attract private capital. In addition to these measures the President advocated the passage of the bill giving a larger measure of self-government to the Philippines. (See Philippines.) Perhaps the most interesting of the subjects treated by the President in his address was the question of national defense. Shortly before the meeting of

Congress the matter had been made a live issue in newspapers and elsewhere and the naval and military conditions existing had been severely criticised. (See sections *Army* and *Navy*.) The President declared that there was no reason to fear threats against the independence or territorial integrity of the United States. He asserted that the United States had always had a clear and settled policy as to military establishments and that there was neither need nor desire for a large standing army. Reliance must be made in time of natural peril not upon a standing army, nor upon a reserve army, but upon a citizenry trained and accustomed to arms. A system must be provided by which every citizen who will volunteer for the training may be made familiar with the use of modern arms, the rudiments of drill and maneuver, and the maintenance and sanitation of camps.

In relation to the navy, the President made the following statement: "A powerful navy we have always regarded as our proper and natural means of defense. . . . We shall take leave to be strong upon the seas, in the future as in the past; and there will be no thought of offense or of provocation in that. Our ships are our natural bulwarks."

On the day following the delivery of the President's address, the Ship Purchase Bill, having already passed the House in the preceding session, was introduced in the Senate by Senator Stone. In the House the Committee on Naval Affairs began an investigation into naval preparedness, Admiral Fletcher, commanding the Atlantic Fleet, Secretary Daniels, and others being heard by the committee. The Ship Purchase Bill was reported favorably by the Committee on Commerce in the Senate on December 16. On the following day Senator Lodge introduced a measure embodying the plans of Secretary Garrison for increasing the army. (See section *Army*.)

The House on December 21 passed the Lever Bill, authorizing Federal licenses for warehouses for cotton, grain, and other nonperishable agricultural products. On December 22 the proposed amendment to the Constitution providing for nation-wide prohibition was voted on in the House, where it received a majority vote of 197 to 189, but not the required two-thirds vote.

On December 23 both branches of Congress adjourned for the holiday recess, but convened again on December 29. The Ship Purchase Bill was reported in the Senate on December 30.

Congressional Representation. Following is a list of the Senators and representatives in Congress in the Sixty-third Congress. The dates following the names of the Senators indicate the expiration of their term of service.

[Democrats in roman; Republicans in *italics;* Progressive Republicans in *italics* with *; Progressives in small caps; Independent in CAPS.]

ALABAMA.—Senators: John H. Bankhead, 1919; Francis S. White, 1915. Representatives (Democrats, 10): At large, John W. Abercrombie; George W. Taylor, S. Hubert Dent, Jr., W. O. Mulkey, Fred L. Blackmon, J. Thomas Heflin, Richmond P. Hobson, John L. Burnett, Christopher C. Harris, Oscar W. Underwood.

ARIZONA.—Senators: Henry F. Ashurst, 1917; † Marcus A. Smith, 1915. Representatives (Democrat, 1): At large, Carl Hayden.

ARKANSAS.—Senators: † James P. Clarke, 1915; Joe T. Robinson, 1919. Representatives (Democrats, 7): Thaddeus H. Caraway, William A. Oldfield, John C. Floyd, Otis Wingo, H. M. Jacoway, Samuel M. Taylor, William S. Goodwin.

CALIFORNIA.—Senators: *George C. Perkins*, 1915; *John D. Works*, 1917. Representatives (Democrats, 3; Republicans, 4; Progressive Republicans, 2; Progressive, 1; Independent, 1): WILLIAM KENT, John E. Raker, *Charles F. Curry*, *Julius Kahn*, John I. Nolan, *Joseph R. Knowland*, Denver S. Church, *Everis A. Hayes*, *Charles W. Bell*,* *William D. Stephens*,* William Kettner.

COLORADO.—Senators: † Charles S. Thomas, 1915; John F. Shafroth, 1919. Representatives (Democrats, 4): At large, Edward T. Taylor, Edward Keating; George J. Kindel, H. H. Seldomridge.

CONNECTICUT.—Senators: † *Frank B. Brandegee*, 1915; *George P. McLean*, 1917. Representatives (Democrats, 5): Augustine Lonergan, Bryan F. Mahan, Thomas L. Reilly, Jeremiah Donovan, William Kennedy.

DELAWARE.—Senators: *Henry A. du Pont*, 1917; Willard Saulsbury, 1919. Representative, (Democrat, 1): At large, Franklin Brockson.

FLORIDA.—Senators: † Duncan U. Fletcher, 1915; Nathan P. Bryan, 1917. Representatives (Democrats, 4): At large, Claude L'Engle; Stephen M. Sparkman, Frank Clark, Emmett Wilson.

GEORGIA.—Senator: † Hoke Smith, 1915; Thomas W. Hardwick, 1919. Representatives (Democrats, 12): Charles G. Edwards, Frank Park, Charles R. Crisp, William C. Adamson, William S. Howard, Charles L. Bartlett, Gordon Lee, Samuel J. Tribble, Thomas M. Bell, Carl Vinson, J. Randall Walker, Dudley M. Hughes.

IDAHO.—Senators: *William E. Borah*, 1919; † *James H. Brady*, 1915. Representatives (Republicans, 2): At large, *Burton L. French*, *Addison T. Smith*.

ILLINOIS.—Senators: J. Hamilton Lewis, 1919; † *Lawrence Y. Sherman*, 1915. Representatives (Democrats, 19; Republicans, 4; Progressive Republican, 1; Progressives, 2; vacancy, 1): At large, Lawrence B. Stringer, William E. Williams; *Martin B. Madden*, *James R. Mann*, George E. Gorman, Adolph J. Sabath, James McAndrews, Frank Buchanan, Thomas Gallagher, *Fred A. Britten*, Chas. M. Thomson, *Ira C. Copley*,* Wm. H. Hinebaugh, *John C. McKenzie*, Clyde H. Tavenner, Stephen A. Hoxworth, Claudius U. Stone, Louis FitzHenry, Frank T. O'Hair, Charles M. Borchers, Henry T. Rainey, James M. Graham, William N. Baltz, Martin D. Foster, H. Robert Fowler, Robert P. Hill.

INDIANA.—Senators: † Benjamin F. Shively, 1915; John W. Kern, 1917. Representatives (Democrats, 13): Charles Lieb, William A. Cullop. William E. Cox, Lincoln Dixon, Ralph W. Moss, Finly H. Gray, Charles A. Korbly, John A. M. Adair, Martin A. Morrison, John B. Peterson, George W. Rauch, Cyrus Cline, Henry A. Barnhart.

IOWA.—Senators: † *Albert B. Cummins*, 1915; *William S. Kenyon*, 1919. Representatives (Democrats, 3; Republicans, 8): *Charles A. Kennedy*, Henry Vollmer, Maurice Connolly, *Gilbert N. Haugen*, *James W. Good*, Sanford Kirkpatrick, *S. F. Prouty*, *Horace M. Towner*, *William R. Green*, *Frank P. Woods*, *George C. Scott*.

KANSAS.—Senators: *Joseph L. Bristow*, 1915; William H. Thompson, 1919. Representatives (Democrats, 5; Republicans, 2; Progressive, 1): *Daniel R. Anthony, Jr.*, Joseph Taggart, *Philip P. Campbell*, Dudley Doolittle, Guy T. Helvering, John R. Connelly, George A. Neeley, Victor Murdock.

KENTUCKY.—Senators:—Ollie M. James, 1919; † Johnson N. Camden, 1915. Representatives (Democrats, 9; Republicans, 2); Alben W. Barkley, Augustus O. Stanley, Robert Y. Thomas, Jr., Ben Johnson, Swagar Sherley, Arthur B. Rouse, J. Campbell Cantrill, Harvey Helm, W. J. Fields, *John W. Langley*, *Caleb Powers*.

LOUISIANA.—Senators: John R. Thornton, 1915; Joseph E. Ransdell, 1919. Representatives (Democrats, 8): Albert Estopinal, H. Garland Dupré, Robert F. Broussard, John T. Watkins, Walter Elder, Lewis L. Morgan, Ladislas Lazaro, James B. Aswell.

MAINE.—Senators: Charles F. Johnson, 1917; *Edwin C. Burleigh*, 1919. Representatives (Democrats 1; Republicans, 3): *Asher C. Hinds*, Daniel J. McGillicuddy, *John A. Peters*, *Frank E. Guernsey*.

MARYLAND.—Senators: † John Walter Smith, 1915; Blair Lee, 1917. Representatives (Democrats, 6): Jesse D. Price, J. Fred. C. Talbott, Charles P. Coady, J. Charles Linthicum, Frank O. Smith, David J. Lewis.

MASSACHUSETTS.—Senators: *Henry Cabot Lodge*, 1917; *John W. Weeks*, 1919. Representatives (Democrats, 6; Republicans, 8; vacancies, 2): *Allen T. Treadway*, *Frederick H. Gillett*, *Calvin D.*

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† Reëlected in 1914.

Paige, *Samuel E. Winslow*, *John J. Rogers*, *Augustus P. Gardner*, M. F. Phelan, Frederick S. Deitrick, *Ernest W. Roberts*, James A. Gallivan, John J. Mitchell, Edward Gilmore, *William S. Greene*, Thomas C. Thacher.

MICHIGAN.—SENATORS: *William Alden Smith*, 1919; *Charles E. Townsend*, 1917. REPRESENTATIVES (Democrats, 2; Republicans, 9; Progressives, 2): At large, *Patrick H. Kelley*; Frank E. Doremus, Samuel W. Beakes, *J. M. C. Smith*, *Edward L. Hamilton*, *Carl E. Mapes*, *Samuel W. Smith*, *Louis C. Cramton*, *Joseph W. Fordney*, *James C. McLaughlin*, ROY O. WOODRUFF, *Francis O. Lindquist*, WILLIAM J. MACDONALD.

MINNESOTA.—SENATORS: *Knute Nelson*, 1919; *Moses E. Clapp*, 1917. REPRESENTATIVES (Democrat, 1; Republicans, 9): At large, *James Manahan*; *Sydney Anderson*, Winfield S. Hammond, *Charles R. Davis*, *Frederick C. Stevens*, *George R. Smith*, *Charles A. Lindbergh*, *Andrew J. Volstead*, *Clarence B. Miller*, *Halvor Steenerson*.

MISSISSIPPI.—SENATORS: John Sharp Williams, 1917; James K. Vardaman, 1919. REPRESENTATIVES (Democrats, 8): Ezekiel S. Candler, Jr., Hubert D. Stephens, Benj. G. Humphreys, Thomas U. Sisson, S. A. Witherspoon, B. P. Harrison, Percy E. Quin, James W. Collier.

MISSOURI.—SENATORS: † William J. Stone, 1915; James A. Reed, 1917. REPRESENTATIVES (Democrats, 15: Republican, 1): James T. Lloyd, William W. Rucker, Joshua W. Alexander, Charles F. Booher, William P. Borland, Clement C. Dickinson, Courtney W. Hamlin, Dorsey W. Shackleford, Champ Clark, *Richard Bartholdt*, William L. Igoe, Michael J. Gill, Walter L. Hensley, Joseph J. Russell, Perl D. Decker, Thomas L. Rubey.

MONTANA—SENATORS: Henry L. Myers, 1917; Thomas J. Walsh, 1919. REPRESENTATIVES (Democrats, 2): At large, John M. Evans, Tom Stout.

NEBRASKA.—SENATORS: Gilbert M. Hitchcock, 1917; *George W. Norris*, 1919. REPRESENTATIVES (Democrats, 3; Republicans, 3): John A. Maguire, C. O. Lobeck, Dan V. Stephens, *Charles H. Sloan*, *Silas R. Barton*, *Moses P. Kinkaid*.

NEVADA.—SENATORS: † Francis G. Newlands, 1919; Key Pittman, 1917. REPRESENTATIVE (Republican, 1): At large, *E. E. Roberts*.

NEW HAMPSHIRE.—SENATORS: † *Jacob H. Gallinger*, 1915; Henry F. Hollis, 1919. REPRESENTATIVES (Democrats, 2): Eugene E. Reed, Raymond B. Stevens.

NEW JERSEY.—SENATORS: James E. Martine, 1917; William Hughes, 1919. REPRESENTATIVES (Democrats, 9; Republicans, 2; vacancy, 1): *William J. Browning*, J. Thompson Baker, Thomas J. Scully, Allan B. Walsh, Wm. E. Tuttle, Jr., Archibald C. Hart, *Dow H. Drukker*, Eugene F. Kinkead, Edward W. Townsend, John J. Eagan, James A. Hamill.

NEW MEXICO.—SENATORS: *Thomas B. Catron*, 1917; *Albert B. Fall*, 1919. REPRESENTATIVE (Democrat, 1): At large, H. B. Fergusson.

NEW YORK.—SENATORS: *Elihu Root*, 1915; James A. O'Gorman, 1917. REPRESENTATIVES (Democrats, 31; Republicans, 11; Progressive, 1): Lathrop Brown, Denis O'Leary, Frank E. Wilson, Harry H. Dale, James P. Maher, *William M. Calder*, John J. Fitzgerald, Daniel J. Griffin, James H. O'Brien, Herman A. Metz, Daniel J. Riordan, Henry M. Goldfogle, George W. Loft, Jefferson M. Levy, Michael F. Conry, Peter J. Dooling, John F. Carew, Thomas G. Patten, WALTER M. CHANDLER, Jacob A. Cantor, Henry George, Jr., Henry Bruckner, Joseph A. Goulden, Woodson R. Oglesby, Benjamin I. Taylor, *Edmund Platt*, George McClellan, Peter G. Ten Eyck, *James S. Parker*, *Samuel Wallin*, *E. A. Merritt, Jr.*, *Luther W. Mott*, Charles A. Talcott, *George W. Fairchild*, John R. Clancy, *Sereno E. Payne*, Edwin S. Underhill, *Thomas B. Dunn*, *Henry G. Danforth*, Robert H. Gittins, Charles B. Smith, Daniel A. Driscoll, *Charles M. Hamilton*.

NORTH CAROLINA.—SENATORS: F. M. Simmons, 1919; † Lee S. Overman, 1915. REPRESENTATIVES (Democrats, 10): John H. Small, Claude Kitchin, John M. Faison, Edward W. Pou, Charles M. Stedman, Hannibal L. Godwin, Robert N. Page, Robert L. Doughton, Edwin Y. Webb, James M. Gudger, Jr.

NORTH DAKOTA.—SENATORS: *Porter J. McCumber*, 1917; † *Asle J. Gronna*, 1919. REPRESENTATIVES (Republicans, 3): *Henry T. Helgesen*, *George M. Young*, *Patrick D. Norton*.

OHIO.—SENATORS: *Theodore E. Burton*, 1915; Atlee Pomerene, 1917. REPRESENTATIVES (Democrats, 18; Republicans, 3; vacancy, 1): At large, Robert Crosser; Stanley E. Bowdle, Alfred G. Allen, Warren Gard, J. H. Goeke, Timothy T. Ansberry, *Simeon D. Fess*, James D. Post, *Frank B. Willis*, Isaac R. Sherwood, *Robert M. Switzer*, Horatio C. Claypool, Clement Brumbaugh, John A. Key, George White, W. B. Francis, William A. Ashbrook, John J. Whitacre, E. R. Bathrick, William Gordon, Robert J. Bulkley.

OKLAHOMA.—SENATORS: † Thomas P. Gore. 1915; Robert L. Owen, 1919. REPRESENTATIVES (Democrats, 6; Republicans, 2): At large, William H. Murray, Joseph B. Thompson, Claude Weaver; *Bird McGuire*, *Dick T. Morgan*, James S. Davenport, Charles D. Carter, Scott Ferris.

OREGON.—SENATORS: † George E. Chamberlain, 1915; Harry Lane, 1919. REPRESENTATIVES (Republicans, 2; Progressive Republican, 1): *Willis C. Hawley*, *Nicholas J. Sinnott*, *A. W. Lafferty*.*

PENNSYLVANIA.—SENATORS: † *Boies Penrose*, 1915; *George T. Oliver*, 1917. REPRESENTATIVES (Democrats, 12; Republicans, 17; Progressive Republican, 1; Progressives, 6): At large, FRED E. LEWIS, *John M. Morin*, ARTHUR R. RUPLEY, ANDERSON H. WALTERS; *William S. Vare*, *George S. Graham*, *J. Hampton Moore*, *George W. Edmonds*, Michael Donohoe, J. Washington Logue, *Thomas S. Butler*, Robt. E. Difenderfer, *William W. Griest*, *John R. Farr*.* John J. Casey, Robert E. Lee, John H. Rothermel, *W. D. B. Ainey*, *Edgar R. Kiess*, John V. Lesher, Frank L. Dershem, *Aaron S. Kreider*, Warren W. Bailey, Andrew R. Brodbeck, *Charles E. Patton*, *Abraham L. Keister*, Wooda N. Carr, HENRY W. TEMPLE, *Milton W. Shreve*, A. Mitchell Palmer, *Jonathan N. Langham*, WILLIS J. HULINGS, *Stephen G. Porter*, M. CLYDE KELLY, *James Francis Burke*, *Andrew J. Barchfeld*.

RHODE ISLAND.—SENATORS: *Henry F. Lippitt*, 1917; *LeBaron B. Colt*, 1919. REPRESENTATIVES (Democrats, 2; Republicans, 1): Geo. F. O'Shaunessy, Peter G. Gerry, *Ambrose Kennedy*.

SOUTH CAROLINA.—SENATORS: Benjamin R. Tillman, 1919; † Ellison D. Smith, 1915. REPRESENTATIVES (Democrats, 7): Richard S. Whaley, James F. Byrnes, Wyatt Aiken, Joseph T. Johnson, David E. Finley, J. Willard Ragsdale, Asbury F. Lever.

SOUTH DAKOTA.—SENATORS: *Coe I. Crawford*, 1915; *Thomas Sterling*, 1919. REPRESENTATIVES (Republicans, 3): *Charles H. Dillon*, *Charles H. Burke*, *Eben W. Martin*.

TENNESSEE.—SENATORS: Luke Lea, 1917; John K. Shields, 1919. REPRESENTATIVES (Democrats, 8; Republicans, 2): *Sam R. Sells*, *Richard W. Austin*, John A. Moon, Cordell Hull, William C. Houston, Joseph W. Byrns, Lemuel P. Padgett, Thetus W. Sims, Finis J. Garrett, Kenneth D. McKellar.

TEXAS—SENATORS: Charles A. Culberson, 1917; Morris Sheppard, 1919. REPRESENTATIVES (Democrats, 18): At large, Daniel E. Garrett, Hatton W. Sumners; Horace W. Vaughan, Martin Dies, James Young, Sam Rayburn, Jack Beall, Rufus Hardy, A. W. Gregg, Joe H. Eagle, George F. Burgess, James P. Buchanan, Robert L. Henry, Oscar Callaway, John H. Stephens, James L. Slayden, John N. Garner, William R. Smith.

UTAH.—SENATORS: † *Reed Smoot*, 1915; *George Sutherland*, 1917. REPRESENTATIVES (*Republicans*, 2): At large, Joseph Howell, Jacob Johnson.

VERMONT.—SENATORS: † *William P. Dillingham*, 1915; *Carroll S. Page*, 1917. REPRESENTATIVES (Republicans, 2): *Frank L. Greene*; *Frank Plumley*.

VIRGINIA.—SENATORS: Thomas S. Martin, 1919; Claude A. Swanson, 1917. REPRESENTATIVES (Democrats, 9; Republicans, 1): William A. Jones, E. E. Holland, Andrew J. Montague, Walter A. Watson, Edward W. Saunders, Carter Glass, James Hay, Charles C. Carlin, *C. Bascom Slemp*, Henry D. Flood.

WASHINGTON.—SENATORS: † *Wesley L. Jones*, 1915; MILES POINDEXTER, 1917. REPRESENTATIVES (Republicans, 3; Progressives, 2): At large, JAMES W. BRYAN, J. A. FALCONER; *William E. Humphrey*, *Albert Johnson*, *William L. La Follette*.

WEST VIRGINIA.—SENATORS: William E. Chilton, 1917; *Nathan Goff*, 1919. REPRESENTATIVES (Democrats, 2; Republicans, 4): At large, *Howard Sutherland*; M. M. Neely, William G. Brown, Jr., *Samuel B. Avis*, *Hunter H. Moss, Jr.*, *James A. Hughes*.

WISCONSIN.—SENATORS: *Robert M. La Follette*, 1917; *Isaac Stephenson*, 1915. REPRESENTATIVES (Democrats, 3; Republicans, 8): *Henry A. Cooper*, Michael E. Burke, *John M. Nelson*, *William J. Cary*, *William H. Stafford*, Michael K. Reilly, *John J. Esch*, *Edward E. Browne*, Thomas F. Konop, *James A. Frear*, *Irvine L. Lenroot*.

WYOMING.—SENATORS: *Clarence D. Clark*, 1917; *Francis E. Warren*, 1919. REPRESENTATIVE (Republican, 1): At large, *Frank W. Mondell*.

ALASKA.—JAMES WICKERSHAM.

HAWAII.—*J. Kalanianaole*.

PHILIPPINES.—Manuel L. Quezon, Manuel Earnshaw.

PORTO RICO.—Luis Muñoz Rivera.

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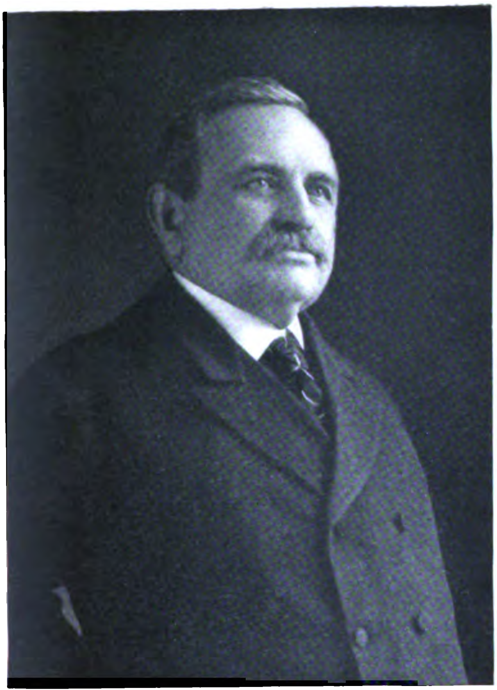
† Reëlected in 1914.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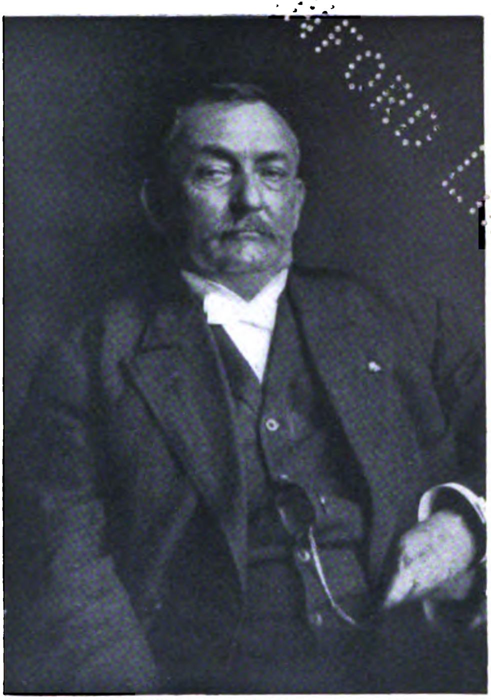
ALABAMA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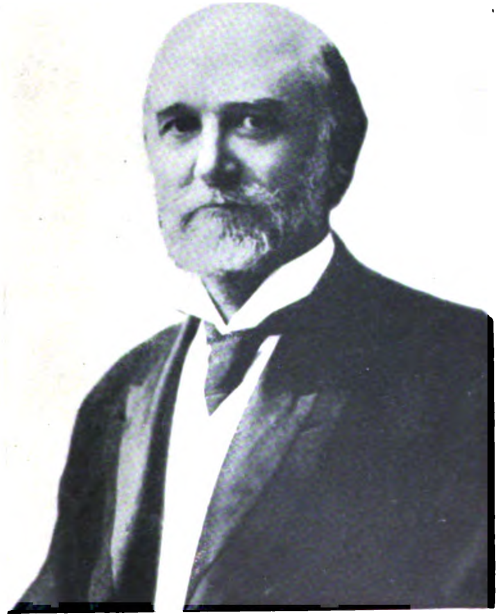
WILLIAM C. ADAMSON
GEORGIA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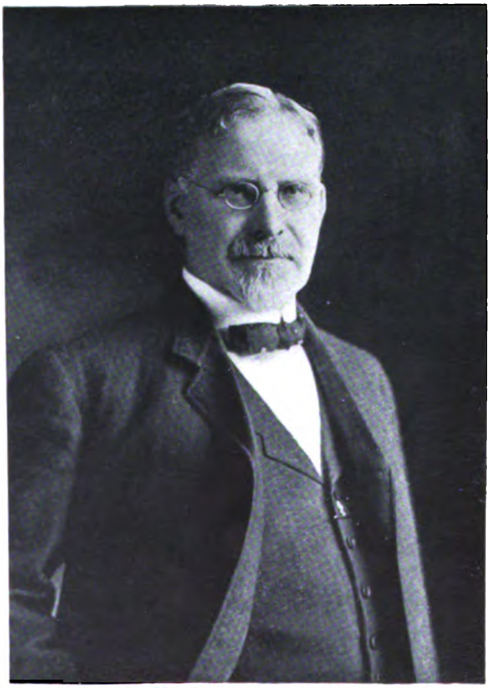
HENRY A. COOPER
WISCONSIN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FREDERICK C. STEVENS
MINNESOTA

FOUR LEADING MEMBERS OF THE UNITED STATES HOUSE OF REPRESENTATIVES, 1914

CLASSIFICATION

SENATE		HOUSE	
Democrats	53	Democrats	286
Republicans	42	Republicans	128
Progressive	1	Prog. Republicans	5
		Progressives	15
		Independent	1
		Vacancies	5
Total	96	Total	485

Appropriations. The following table gives the amount appropriated by Congress during sessions of the Sixty-third Congress:

	1914	*1915*
Deficiencies	$27,080,512.29	$23,828,999.41
Legislative, Executive and Judicial	35,172,434.50	37,680,781.87
Sundry Civil	106,749,532.01	103,080,275.74
Support of the Army	94,266,145.51	101,019,212.50
Naval Service	140,718,434.53	144,868,716.61
Indian Service	9,486,819.67	9,771,902.76
Rivers and Harbors	51,118,889.00	26,989,000.00
Forts and Fortifications	5,218,250.00	5,627,700.00
Military Academy	1,099,734.87	997,788.54
Post Office Department	Indefinite	Indefinite
Pensions	180,300,000.00	169,150,000.00
Consular and Diplomatic	3,730,642.66	4,309,856.66
Agricultural Department	17,986,945.00	19,865,832.00
District of Columbia	11,888,739.00	12,171,457.28
Reclamation Fund	....	....
Reliefs and Miscellaneous	445,197.22	14,878,428.99
Totals	$684,757,276.26	$674,190,062.86

Sixty-fourth Congress. The elections of Nov. 3, 1914, which are treated somewhat in detail in the section *Elections in 1914*, determined the political complexion of the Sixty-fourth Congress. In the Sixty-third Congress there were in the House 291 Democrats, 124 Republicans, 19 Progressives, and 1 Independent. The results of the elections reduced the Democratic membership to 232; increased the Republican membership to 194; decreased the Progressive membership to 7. The Independent membership remained the same, and a Socialist member was elected from New York. The Senate in the Sixty-third Congress was composed of 53 Democrats, 42 Republicans, and 1 Progressive. As a result of November elections the Democratic membership was increased to 56; the Republican membership reduced to 39; while the Progressive membership remained the same. Thus while there resulted in a considerable decrease in the Democratic majority in the House, the majority in that party in the Senate was increased. New Senators elected to the Sixty-fourth Congress are the following:

Oscar W. Underwood, Alabama, succeeding F. S. White.

James D. Phelan, California, succeeding George C. Perkins.

Thomas W. Hardwick, Georgia, succeeding Augustus O. Bacon.

J. C. W. Beckham, Kentucky, succeeding Johnson N. Camden.

Robert F. Brussard, Louisiana, succeeding John R. Thornton.

Warren G. Harding, Ohio, succeeding Theodore E. Burton.

E. S. Johnson, South Dakota, succeeding Coe I. Crawford.

Paul O. Husting, Wisconsin, succeeding Isaac Stephenson.

Members of the Senate reëlected in 1914 are indicated in the table of membership of the Sixty-third Congress.

Elections in 1914

The elections held between Presidential elections are always of interest as tending to indicate the extent to which the people endorse policies of the administration in power. Measured by this test both the supporters and opponents of President Wilson's administration were enabled to derive some satisfaction from the results of the elections of Nov. 3, 1914. While in a measure the most conspicuous feature of the elections was the revival of Republican strength and the remarkable weakness of the Progressive party, the Democrats gained in the Senate although they lost in the House.

In 31 of the 48 States, United States Senators were elected for the first time in the history of the country by direct universal suffrage. In most of the States, State Legislatures and State officers were also elected, and in all States, except Maine, Representatives to Congress were chosen. The Maine elections are held in September. The result of the elections in the different States are treated in the State articles. There will be given here only a general review of the results from a national standpoint.

The official returns from the States show that while the Republican party gained remarkably in the election the total Democratic vote also increased, while not only the Progressive but the Prohibition and Socialist parties lost in the total number of votes. Returns show also that the Democratic popular vote exceeded that of the Republicans.

Of course the chief outstanding fact of the election is found in the decrease in Progressive vote as compared with the total of 1912. The collapse of this party's vote throughout the country is greater indeed than figures indicate, for, of the 1,916,417 votes polled by the party in all the States, 932,679 were polled in only three States—California, Pennsylvania, and Illinois—which have only 80 votes in the Electoral College. Of these three States, the Progressives carried only California, losing in all 2,213,090 votes. The Republicans gained 2,528,418 and the Democrats gained 31,943, while the Socialist and Prohibition losses, respectively, were 214,378 and 14,059.

While the Socialists lost in their total vote, they gained remarkably in some States and succeeded in electing a Congressman in New York. They made large gains in Oklahoma, and gains also in Montana, Virginia, and Nevada. The Prohibition party made gains in several of the States, including Arizona, California, Massachusetts, Minnesota, New York, and Oregon. There were very large Progressive losses in most of the Western States and most of these were gained by the Republican party.

Republican Convention Delegates. A new plan of representation in the Republican national conventions in 1914 was approved by the party in States which cast a majority of the votes of the Electoral College. As this was the condition attached to the proposition, put forth in December, 1913, the plan was made effective. The new basis of representation reduced the whole number of delegates by 89, and nearly all the loss is in the Southern States. The old plan, based upon the electoral votes of each State, gave excessive representation in States where the number of Republican voters was small. The new plan is based in part upon the number of Republican votes cast. The losses in delegates suffered by the States are as follows: Alabama, 8; Arkansas, 3; Florida, 4; Georgia, 11; Louisiana, 8; Mississippi, 8; New York, 2; North Carolina, 3; South Carolina, 7; Tennessee, 3; Texas, 16; Virginia, 8; Hawaii, 4; Porto Rico, 2; Philippines, 2. The only Northern State affected is New York.

ADMINISTRATION

The history of the administration of President Wilson in 1914 in its larger and more formal aspects is treated elsewhere in the YEAR BOOK, especially in the article UNITED STATES, sections *Congress* and *Foreign Relations* and in the articles MEXICO, IMMIGRATION, TRUSTS, CURRENCY, BANKS AND BANKING, STRIKES, PANAMA CANAL TOLLS, WOMAN SUFFRAGE, and other general articles dealing with the political and economic history of the United States during the year. This section is intended to cover only those phases of the administration and President Wilson's relation to it which do not properly fall under any of these main topics.

The President's relations with his cabinet continued to be untroubled during the year. He ignored the rather severe criticisms made upon Secretary Bryan and also those hardly less severe made upon Secretary Daniels in his conduct of the Navy Department. On May 4, John Bassett Moore resigned as Counselor of the State Department and Acting Secretary in the absence of Mr. Bryan. In a letter to the President he recalled the fact that at the beginning of his term he had indicated that his tenure was only provisional, his motive being to give service during a period of transition. He said that as the organization of the department's affairs had been completed there was no occasion for his further services. There was a general impression, apparently not unjustified, that Mr. Moore had not found the position an altogether congenial one. Robert Lansing of New York was appointed to succeed him.

The last weeks of 1913 and the first of 1914 the President spent resting at Pass Christian, Miss. On May 17 he spoke at the unveiling of the statue of Commodore John Barry, at Washington, and a few days later made an address on the dedication of the American University in the same city. He unveiled the monument to Confederate dead at the Arlington National Cemetery on June 5, and on the following day spoke at the commencement exercises of the Naval Academy. He was present and made an address at the 4th of July celebration at Independence Hall in Philadelphia. On August 7 the President suffered a great bereavement in the death of Mrs. Wilson, and following this he made no addresses and took part in no social observances during the remainder of the year. In August he took a short vacation at Cornish, N. H. The President expressed himself as satisfied with the results of the elections in November, 1914, and saw in them an endorsement of his policies.

FOREIGN RELATIONS

The year 1914 was one of the most important in respect to relations with other countries in the history of the United States. Conditions in Mexico became even worse than in 1913. (See MEXICO.) With the exception of Mexico, relations with North American countries were on the whole friendly, although there were more or less serious complications with several of the Central American States.

NICARAGUA. Financial difficulties in Nicaragua resulting from the failure of the effort to arrange for a loan from the United States continued in 1914. The foreign creditors of that country pressed for payment and there was no money in the Treasury. Mr. Bryan said, in January, that the plan for aiding Nicaragua, which was devised by the Taft administration and embodied in a loan convention which the United States Senate would not accept, had not been finally disapproved and excluded by the present Administration. The loan convention, however, was very earnestly opposed by Senator Bacon and other Democrats, and there was a general belief that it would not be ratified. There was also objection among the Democratic members of the Senate to the pending new treaty, which provided that Nicaragua should receive from the United States $3,000,000 for an exclusive right to construct an interoceanic canal on the Nicaragua route, a naval station in the Gulf of Fonseca, and three small islands. This treaty, with other additions, would virtually establish an American protectorate over Nicaragua. A protest was made by Honduras to the passage of this treaty on the ground that it would prevent a union of the Central American countries, but the treaty received the unanimous approval of the Nicaraguan Senate and House.

On account of opposition to the provisions in the treaty with Nicaragua relating to a practical protectorate on the part of the United States, Secretary Bryan and the Nicaraguan minister in September signed another treaty, shorn of the protectorate features. This treaty was practically a copy of the one negotiated by the Taft administration. It provides for a payment of $3,000,000 to Nicaragua, which in return is to give to the United States a perpetual option on the Nicaragua interoceanic canal route, a naval station in the Gulf of Fonseca, and two small islands near the east coast. The $3,000,000 paid to Nicaragua is to be used in liquidating the national debt.

PANAMA. On September 2 a new treaty was signed by the representatives of Panama and the United States government. Under this treaty, which replaces the Davis agreement of 1904, the United States gains control of the waters of Colon and Ancon, together with certain other rights, while a large tract of land known as "The Savannahs" which will place the city of Panama in direct physical communication with the rest of the country hitherto cut off by the canal zone, is ceded to the republic. No railway, however, is to be built across this connecting territory except with the consent of the United States, and it is expressly stipulated in the treaty that for the purpose of defending the canal or any of its approaches it may be retaken and reoccupied at will. The two harbors of Colon and Ancon pass under the absolute control of the United States, and are to be fortified and used as places of operation and defense. The piers on the Colon waterfront, estimated to have cost approximately $2,500,000, also pass under the control of the American government. This

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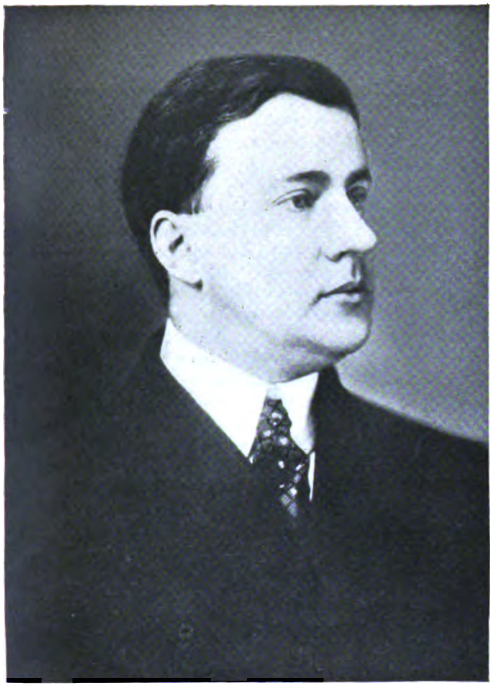

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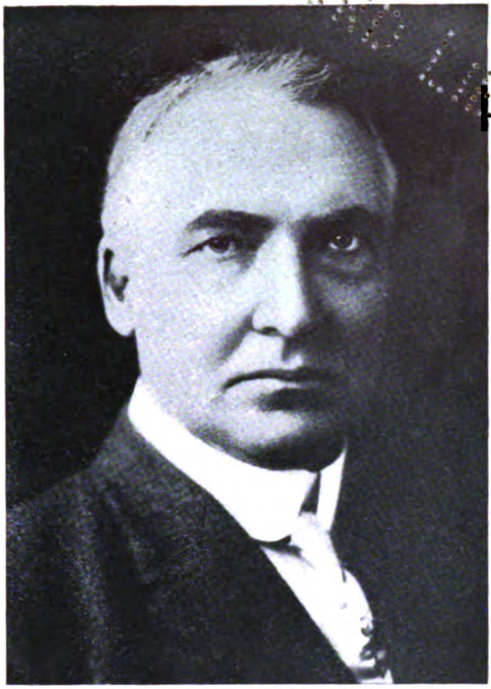
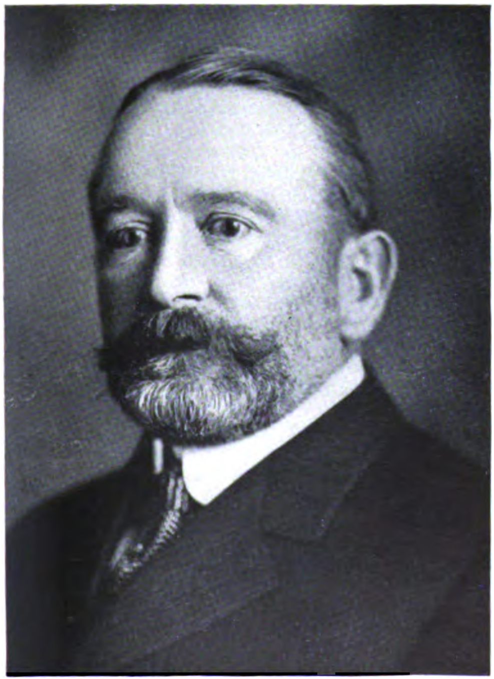
J. C W. BECKHAM
KENTUCKY



Photograph by Paul Thompson, N. Y.

WARREN G. HARDING
OHIO



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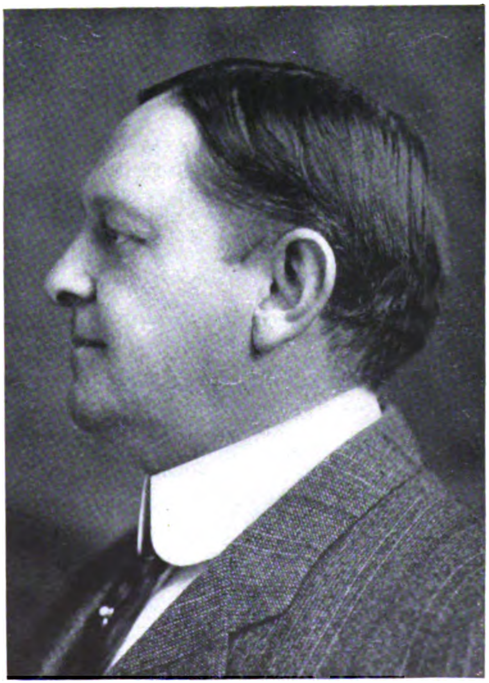
JAMES D. PHELAN
CALIFORNIA



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OSCAR W. UNDERWOOD
ALABAMA

FOUR UNITED STATES SENATORS ELECTED IN 1914

treaty had been under negotiation for four years, but until September, 1914, it had been impossible to get Panama to give a full agreement.

SANTO DOMINGO. For the United States' intervention in Dominican affairs, see the article DOMINICAN REPUBLIC, *History*.

COLOMBIA. During January negotiations were in progress at Washington and at Bogota for a settlement concerning the secession and independence of the Colombian province of Panama. During the administration of President Taft, Colombia earnestly insisted upon arbitration at The Hague. To this the United States would not consent, but it made a proposition which involved the payment of $10,000,000, which was rejected by Colombia.

A treaty between the United States and Colombia was signed at Bogota on April 7, and at that time the substance of several of its provisions were published. By the terms of the treaty the United States government was to pay $25,000,000 as indemnity. The boundary between Colombia and Panama is fixed, but the location of it gives to Colombia a strip of land which is claimed by Panama. It will therefore be necessary to negotiate a new treaty between Panama and Colombia, and the United States government undertakes to use its good offices in support of such a treaty. By other provisions of the treaty the free passage of salt, coal, and oil from Colombian ports is permitted from the Atlantic to the Pacific coast through the Panama Canal, and warships and other vessels are exempted from the payment of Panama Canal tolls. Concession is based upon the consent given by Great Britain for such free passage in 1909, when provisions to that effect were inserted in the Root-Cortez treaty, which Colombia did not accept.

The text of the treaty was published in Bogota on April 14. It was not published in the United States on account of objections of the chairman of the Senate Committee on Foreign Relations. Article I of the treaty as published reads as follows: "The government of the United States, desiring to put an end to all disputes and differences with the republic of Colombia occasioned by events which have brought about the present situation on the Isthmus of Panama, in its name and in the name of the people of the United States, expresses sincere regret for anything that may have interrupted or altered the relations of cordial friendship long existing between the two nations. The government of Colombia, in its name and in the name of the Colombian people, accepts this declaration in the full assurance that every obstacle to the reëstablishment of complete harmony between the two countries will thus disappear."

The Colombian Senate on May 2 ratified the treaty with the United States. An official copy, published by a newspaper in Bogota, indicated that the version published some weeks previous in the United States, which was translated from the French was in some details incorrect. The differences were largely those of phraseology, but they were important. Thus in the first published version the United States expressed "sincere regret *for anything* that may have interrupted or altered the relations of cordial friendship long existing between the two nations." In the copy published in Bogota the United States expressed "sincere regrets *that anything* should have occurred to interrupt or to mar the relations of cordial friendship." This change affected what was called by opponents of the treaty an apology on the part of the United States government, and, with respect to that, it was of some importance.

In the latter part of June the Senate Committee on Foreign Relations again took up the treaties between the United States and Nicaragua and Colombia. Secretary Bryan appeared before the committee and defended the treaties. Both agreements were opposed with much bitterness by several members of the committee, one of whom, Mr. Smith, of Michigan, introduced in the Senate a resolution in which sensational charges relating to the treaty with Nicaragua were made. The substance of these was that the continued presence of American marines at Nicaragua's capital, and the support of the United States in other ways, had enabled New York bankers to make large profits at Nicaragua's expense. It was asserted in a resolution that a part of the profit had been derived from bonds of the par value of $6,250,000, issued by President Zelaya, bought at twenty-five cents on the dollar, and forced upon Nicaragua at par by American pressure; that part had been gained by the control of Nicaragua's railroads; that a fiscal agent appointed by the United States had served the banker's interests, and that Nicaragua had been compelled to pay the salaries of many Americans. The bankers mentioned in the resolution made a denial which was read in the Senate. They declared that they had made no profit by their relations with Nicaragua, but had assisted Nicaragua by adjusting her foreign debt and currency, and improving her customs service.

In reply to severe criticisms made against the treaty with Colombia, Mr. Bryan published a long defense of the agreement. The expression of regret contained in the treaty, he asserted, is identical in meaning and almost identical in words with the expression in the memorandum handed to the Colombian government by the United States minister in President Roosevelt's administration.

At a caucus of Democratic Senators held late in July, it was decided that no action would be taken at that session of Congress on the Colombian or Nicaraguan treaties. In a letter to Senator Stone, chairman of the Committee of Foreign Relations, Mr. Roosevelt made the following statement in relation to his participation in the events which led to the acquisition of the Panama Canal Zone.

"I was President throughout the time of the negotiations, first with Colombia and then with Panama, by which we acquired the right to build the Panama Canal. Every act of this government in connection with these negotiations and with other proceedings for taking possession of the Canal Zone and beginning the building of the canal was taken by my express direction or else in carrying out the course of conduct I, as President, had laid down. I had full knowledge of everything of importance that was done in regard thereto by any agent of the government, and I was solely responsible for what was done. I request to appear before you, to make a full statement of exactly what I did and of what was done by my orders, to state the reasons therefor, and to answer any questions that your body or the members of your body may choose to put to me."

Mr. Roosevelt was not heard by the committee.

For an account of peace treaties signed between the United States and South and Central American countries, see the article INTERNATIONAL ARBITRATION.

EUROPEAN WAR. On the outbreak of the European War (see WAR OF THE NATIONS) a proclamation of neutrality was issued by President Wilson, and on the same day, August 18, he issued to the people of the United States a notable address pointing out the proper attitude to be observed by American citizens toward the contending countries.

The United States government undertook to represent Germany in Russia, France in Austria-Hungary, and Austria-Hungary in France. It also looked after British affairs in Germany and Austria, and Japanese affairs in Germany. The President designated October 4 to be in the United States a day of prayer for peace.

The repeated seizure and search of American vessels by naval forces of Great Britain resulted in the dispatch of a long note on December 27. In this note protests were made against the detentions and seizures of cargoes and it was pointed out that the British policy was directly responsible for the depression in many American industries, and that after five months of war there had been no improvement in the situation. For a discussion of the relief undertaken by the United States government and its citizens in behalf of the afflicted countries in Europe, see the article RELIEF FOR WAR VICTIMS. On November 16 Turkish batteries at Smyrna fired upon a launch from the United States battleship *Tennessee*, which attempted to land in that harbor. Threatened difficulties between the two governments were reverted by the explanation of the Turkish government that the shot was intended merely to warn the launch away from a mine field. On December 24-25 the one hundredth anniversary of the signing of the Treaty of Ghent, which ended the war between Great Britain and the United States, was observed in the United States, England, and Canada. Relations with Asiatic countries were friendly during the year. No positive action was taken in the matter of adjusting conditions between the United States and Japanese governments resulting from the passage of the alien land laws of California and other States. There was an exchange of communications between the State departments of the two governments during the year, but no definite solution was attempted.

UNITED STATES DEPARTMENT OF AGRICULTURE. In 1914 Congress gave Secretary Houston authority "to prepare a plan for reorganizing, redirecting, and systematizing the work of the Department of Agriculture as the interest of economical and efficient administration may require." A committee of officers from various bureaus studied the department's work and organization. Its report, with some modifications, was approved by the secretary and recommended to Congress for adoption. The retention of the existing bureau organization is favored, with certain rearrangements. Within the bureaus there is to be a more definite segregation of the work in three groups, (1) regulatory, (2) research, and (3) extension work. A number of lines of work are to be transferred from one bureau to another. The farm management studies of the Bureau of Plant Industry, which involve work along all branches of agriculture with special reference to their economic bearings, will be attached to the office of the secretary. The soil fertility investigations of the Bureau of Soils will go to the Bureau of Plant Industry; the poisonous plant investigations of that bureau to the Bureau of Animal Industry, which will also receive the investigations of duck diseases from the Biological Survey; the wood-distillation studies of the Bureau of Chemistry to the Forest Service. The Office of Public Roads will be developed into an Office of Public Roads and Rural Engineering, receiving the irrigation and drainage investigations from the Office of Experiment Stations and rural architecture from the Bureau of Plant Industry. To the new Office of Markets and Rural Organization are brought from the Bureau of Plant Industry the investigations on farm credit and insurance; from the Bureau of Animal Industry the market milk investigations and in part the poultry and egg investigations. The most radical changes relate to the Office of Experiment Stations. In consequence of the passage of the Smith-Lever Extension Act (see AGRICULTURE) a department organization was required to put into effect the coöperative relations in agricultural extension work between the State agricultural colleges and the department as contemplated in this act. It therefore seemed best to bring all the extension work of the department under the supervision of a single bureau, which would supervise both the Federal funds given to the colleges under the Smith-Lever Act and the funds which the department has for extension work under coöperative agreements with the colleges. The Office of Experiment Stations is already closely associated with these colleges through advisory and supervisory relations with their experiment stations, investigations regarding the teaching of agriculture, and studies in home economics. It is therefore appropriate to expand this office into a States Relations Service to represent the department generally in its relations with the State Agricultural colleges. This Service will include the office of experiment stations, limited to relations with the stations; an office of agricultural instruction; an office of home economics, and two offices of extension work. The latter offices will have the supervision of the Smith-Lever funds, combined with the administration of the funds for farmer's coöperative demonstration work transferred from the Bureau of Plant Industry. The present arrangement by which one of these offices supervises the extension work in 15 Southern States while the other does similar work in the remaining States will be continued.

The appropriations for the department for the year ended June 30, 1914, amounted to $17,986,945 for ordinary expenses, in addition to permanent and special appropriations and balances from prior years amounting to $12,225,885, making a total of $30,212,832. About $2,440,000 was received from the sale of timber on the national forests, grazing permits, condemned property, etc. The department continued coöperation with the Postmaster-General in the improvement of selected mail-route roads for which Congress appropriated $500,000, conditioned on the raising of double that amount by the States in which such roads are located. The appropriations for the year ending June 30, 1915, for ordinary expenses amounted to $19,865,832. The increased allotments are distributed throughout the department, including many lines of research and a larger amount of demonstration work. The administrative and regulatory functions of the department continue to absorb about two-thirds of the total appropriations.

In 1914 the department published 1152 documents, aggregating 26,691,692 copies. There were 16,061 employees on July 1, 1914, of whom 3226 were employed in Washington. The number of women employed was 1821. Dr. B. T. Galloway, Assistant Secretary of Agriculture, left the department Aug. 1, 1914, to become director of the New York State College of Agriculture at Cornell University and was succeeded by Carl Schurz Vrooman of Bloomington, Ill.

UNITED STATES MILITARY ACADEMY. During the months of June, July, and August, 1914, 214 candidates were admitted as cadets of the Academy, bringing the total strength of the corps, on September 1, to 671. The superintendent and commandant in 1914 was Col. Clarence P. Townsley of the coast artillery corps. The military staff included Capt. George Vidmer, adjutant of the Military Academy and of the Post; Maj. Edward J. Timberlake, quartermaster of the Academy and of the Post; Maj. Peter Murray, treasurer of the Academy; and Lieut.-Col. Henry A. Shaw, surgeon..

UNITED STATES NATIONAL MUSEUM. The growth of the museum during recent years has been greater than during any period of its history, as with the completion of its new building it has been able to expand its collections. During the fiscal year 1914 there was added a total of 337,705 objects, 14,879 of which pertained to anthropology, 257,816 to zoölogy, 44,675 to botany, 3648 to geology and mineralogy, 13,045 to paleontology, 2930 to textiles and other animal and vegetable products, 505 to mineral technology, and 207 to the National Gallery of Art. Among the most important accessions in ethnology were more than 500 objects from Dutch New Guinea, the Moluccas, and Ambon of the Ceram group, collected and presented by Dr. W. L. Abbott. The collection of fine arts was added to by further gifts from Mr. Charles L. Freer, of Detroit. During the fiscal year 14,564 specimens were distributed to schools and colleges throughout the country. The total attendance of visitors to the new or natural history building during the year was 267,728 for week days and 61,653 on Sundays, while the older building was visited by 146,533 persons. The publications of the year numbered 14 volumes and 58 separate papers. The museum forms a part of the Smithsonian Institution. The assistant secretary in charge is Richard Rathbun.

UNITED STATES NAVAL ACADEMY. The total number of students enrolled in the Academy in the autumn of 1914 was 940, and the faculty numbered 125. There were no special changes in the faculty during the year. The superintendent is Capt. W. F. Fullam, the secretary, Mr. P. H. Magruder, and the commandant of midshipmen, Capt. G. H. Burrage.

UNITED STATES PUBLIC HEALTH SERVICE. See PUBLIC HEALTH SERVICE.

UNIVERSALISTS. The estimated number of communicants in this denomination in 1913 was 51,716, with 709 churches and 702 ministers, the Sunday schools containing about 50,000 pupils. Foreign missionary work is carried on in Japan and China. Social work is carried on by the Commission on Social Service, organized in 1910, which has engaged in a campaign of education to stimulate interest in the subject among ministers, divinity students, men's clubs, women's societies, and young people's societies. The commission also secures the discussion of social service topics at church gatherings and the exchange of social service information through the church press. The institutions of higher education include Tufts College, at Medford, Mass.; St. Lawrence University, at Canton, N. Y.; Buchtel College, at Akron, Ohio; and Lombard College, at Galesburg, Ill.

UNIVERSITIES AND COLLEGES. EUROPEAN. *Attendance.* The following table shows the attendance in the principal European universities for the years indicated.

Universities	*Attendance* *1910-11*	*1911-12*	*1912-13*	*1913-14*
Austria—				
Czernowitz, German	971	....	1,189	1,194
Graz, German	2,073	....	2,147	2,208
Innsbruck, German	1,298	....	1,357	1,480
Cracow, Polish	3,380	....	3,647	3,344
Lemberg, Polish	4,704	....	5,567	5,871
Prague, German	1,844	....	2,053	2,282
Prague, Bohemian	4,432	....	4,406	4,718
Vienna, German	7,148	....	10,225	10,810
Total	25,848	....	30,591	31,646
Women	....	....	2,624	2,701
Belgium—				
Brussels	1,250	....	1,338	....
Ghent	1,176	....	1,223	....
Liége	2,790	....	2,861	....
Louvain	2,630	....	2,735	....
Total	7,846	....	8,157	....
Denmark—				
Copenhagen	3,000*	....	....	3,000*
England and Wales—				
Birmingham	984	....	1,017	....
Bristol	543	....	700	....
Cambridge	3,726	....	3,743	....
Durham	1,049	....	1,100	....
Leeds	933	....	901	....
Liverpool	914	....	1,078	....
London	4,119	....	4,120	....
Manchester	1,554	....	1,557	....
Oxford	3,857	....	3,951	....
Sheffield	885	....	818	....
Wales	1,551	....	1,500	....
Total	20,755	....	20,490	....
France—				
Aix-Marseilles	1,264	....	1,138	....
Amiens	92	....	78	....
Angers	102	....	82	....
Besançon	239	....	262	....
Bordeaux	2,620	....	2,548	....
Caen	691	....	643	....
Clermont-Ferrand	278	....	280	....
Dijon	1,048	....	974	....
Grenoble	1,272	....	1,485	....
Lille	1,801	....	1,828	....
Limoges	107	....	83	....
Lyons	3,091	....	3,084	....
Montpellier	2,028	....	2,155	....
Nancy	1,886	....	1,944	....
Nantes	320	....	331	....
Paris	17,238	....	17,104	....
Poitiers	1,115	....	1,257	....
Reims	88	....	70	....
Rennes	1,573	....	1,601	....
Rouen	103	....	91	....
Toulouse	2,864	....	2,685	....
Tours	92	....	69	....
Algiers	1,283	....	1,317	....
Total	41,190	....	41,109	....
Women	3,954	....	4,056	....
Foreigners	5,380	....	5,559	....
Germany—				
Berlin	....	9,829	....	9,593
Bonn	....	3,998	....	4,270
Breslau	....	2,702	....	2,791

Universities	*Attendance* 1910-11	1911-12	1912-13	1913-14
Erlangen	....	1,202	....	1,841
Freiburg	....	2,466	....	2,572
Giessen	....	1,272	....	1,840
Göttingen	....	2,506	....	2,815
Greifswald	....	1,124	....	1,250
Halle	....	2,379	....	2,910
Heidelberg	....	2,281	....	2,409
Jena	....	1,738	....	1,862
Kiel	....	1,586	....	1,847
Königsberg	....	1,505	....	1,568
Leipzig	....	5,170	....	5,532
Marburg	....	1,968	....	2,168
Münich	....	6,797	....	....
Münster	....	2,126	....	2,128
Rostock	....	852	....	914
Strassburg	....	2,188	....	2,092
Tübingen	....	1,852	....	1,387
Würzburg	....	1,458	....	1,515
Total	....	....	....	59,601
Women	....	....	....	3,600*
Foreigners	....	....	....	5,015
Greece—				
Athens	2,800*	3,858	....	....
Foreigners	....	800	....	....
Hungary—				
Agram	....	1,189	....	....
Budapest	7,548	6,858	....	....
Debeczen	....	278	....	....
Kolozsvar	....	2,406	....	....
Pozsony	....	224	....	....
Total	....	10,950	....	....
Ireland—				
National University University College, Dublin	....	770	....	....
University College, Cork	....	425	....	....
University College, Galway	....	140	....	....
Dublin University	....	1,100	....	....
Queen's University, Belfast		606	....	....
Italy—				
Bologna	....	....	1,577	....
Cagliari	....	....	222	....
Camerino	....	....	868	....
Catania	....	....	1,059	....
Ferrara	....	....	546	....
Genoa	....	....	1,192	....
Macerata	....	....	811	....
Messina	....	....	284	....
Modena	....	....	450	....
Naples	....	....	3,778	....
Padua	....	....	1,503	....
Palermo	....	....	1,498	....
Parma	....	....	887	....
Pavia	....	....	1,066	....
Perugia	....	....	289	....
Pisa	....	....	891	....
Rome	....	....	2,821	....
Sassari	....	....	160	....
Siena	....	....	280	....
Turin	....	....	1,833	....
Urbino	....	....	308	....
Total	....	....	20,708	....
Women	....	....	2,098	....
Foreigners	....	....	228	....
Netherlands—				
Amsterdam	1,189	....	1,034	....
Gröningen	....	....	579	....
Leyden	1,195	....	1,211	....
Utrecht	1,082	....	1,096	....
Total	....	....	3,920	....
Norway—				
Christiania	1,500*	....	1,500*	....
Portugal—				
Coimbra	1,262	....	1,350*	....
Lisbon	....	....	827	....
Oporto	....	....	200*	....
Rumania—				
Bucharest	3,398	....	3,283	....
Jassy	900*	....	900*	....
Russia—				
Dorpat	2,901	....	2,684	....
Helsingfors	2,830	....	3,532	....
Kazan	2,955	....	2,122	....
Kharkov	4,603	....	3,342	....
Kiev	3,000*	....	3,000*	....
Moscow	9,940	....	9,390	....
Odessa	2,699	....	2,002	....
St. Petersburg	9,586	....	7,280	....
Warsaw	1,911	....	2,415	....
Total	....	....	37,767*	....
Scotland—				
Aberdeen	1,800*	....	1,300*	....
Edinburgh	3,421	....	3,352	....
Glasgow	2,726	....	2,800*	....
St. Andrew	510	....	510*	....
Servia—				
Belgrade	1,025	....	1,127	....
Spain—				
Barcelona	1,900*	....	2,430*	....
Granada	1,000*	....	1,000*	....
Madrid	5,675	....	5,675*	....
Oveido	900*	....	900*	....
Salamanca	1,200*	....	1,200	....
Valencia	1,700*	....	1,700*	....
Valladolid	4,600*	....	4,600*	....
Sweden—				
Lund	1,162	....	1,347	....
Stockholm	562	....	691	....
Upsala	2,261	....	2,419	....
Switzerland—				
Basel	806	....	....	1,156
Berne	1,664	....	....	2,302
Freiburg	620	....	....	655
Geneva	1,438	....	....	2,264
Lausanne	1,227	....	....	1,432
Zürich	1,452	....	....	2,316
Total	....	....	....	10,596
Women	....	....	....	1,069

* Estimate based upon the latest available report.

AMERICAN

ATTENDANCE. For the year 1912–13, 596 universities, colleges, and technological schools reported to the United States Bureau of Education. These institutions enrolled 190,147 collegiate, 12,084 resident graduate, and 36,869 professional students. There were in addition 38,185 students of music, art, oratory, business, and like courses who were not enrolled in four-year courses leading to collegiate degrees. The proportion of women among the undergraduate students remains at about 36 per cent. There is a slow but steady increase in the per cent of women among the graduate students. In 1912–13 it reached 31.6 per cent. The proportion of women in our higher institutions is very large when compared with the European countries. Germany and Italy each had about 5 per cent and France 10 per cent women in their universities. There were 145 colleges for men with an enrollment of 37,503 students, and 105 colleges for women with 18,896 students.

No less than 53 different kinds of degrees were granted by the institutions reporting. The Bachelor of Science degree was given to 4781 men and to 1089 women, the Bachelor of Art degree to 7924 men and to 6848 women, and the Master of Arts was given to 1555 men and to 814 women. The Doctor of Philosophy degree was conferred on examination by 44 institutions upon 433 men and 57 women. More than a half of the doctorates were from six institutions. Columbia University gave 67, Harvard 48, Chicago 46, Yale 39, Cornell 35, Johns Hopkins 32, and the University of Pennsylvania 31 doctorates.

The professors and instructors numbered 16,075 men and 3783 women in the collegiate departments and 6955 men and 92 women in the professional departments.

In the professional schools for theology, law, medicine, dentistry, pharmacy, and veterinary medicine there were 65,585 students in 1912–13. The schools of medicine showed a loss of 1214 students from the previous year. The schools of theology also lost 227 students. The following table presents a summary of the essential facts regarding the students and graduates for 1912–13 in the professional schools.

Class	*Schools*	*Students*	*Graduates in 1913*
Theology	179	10,965	1,977
Law	124	20,878	4,427
Medicine (regular)	94	16,180	3,149
Medicine (homeopathic) ..	10	891	196
Dentistry	48	8,015	1,976
Pharmacy	75	6,165	1,818
Veterinary medicine	22	2,824	688

In view of the apprehension that was felt regarding the influence of adverse economic conditions upon the attendance in higher institutions, it is interesting to note that there has apparently been a marked increase of students in nearly all of the institutions that have reported. *Science* for Dec. 25, 1914, gives the registration returns for Nov. 1, 1914, of 30 institutions of the country. The net gain of students in these institutions over corresponding enrollment for 1913 was 11,330. The same article gives the registration in various departments of the 30 institutions. New York University has the largest registration of medical and school of commerce students and lacks only one of having the largest law school. Syracuse has the largest enrollment of art, of forestry, and of music students. Cornell has the largest number of scientific school students, of agricultural, and of architectural students. The nonprofessional graduate school and the pedagogical departments of Columbia are largest. The University of California with 1238 college men and 1853 college women has the largest number of undergraduate students.

Anniversaries. The following anniversaries were observed during the year. The one hundred and fiftieth anniversary of Brown University; the centenary of the Yale Medical School; the seventy-fifth anniversary of the University of Missouri; the fiftieth anniversary of the St. Louis College of Pharmacy, and of the School of Mines of Columbia University; the twenty-fifth anniversaries of Johns Hopkins Hospital School, the North Carolina College of Agriculture and Mechanical Arts, and Teachers College, Columbia University.

The Association of Urban Universities. Municipal colleges are a recent development in the United States. Each year, however, a larger number of institutions come to regard themselves as peculiarly related to the cities in which they are located. In commenting upon the work of such colleges, an editorial in the New York *Evening Post* says: "The institutions thus developing may be regarded as a step in democratizing education. The State universities play their part well; but from the point of view of the city university, they cannot meet the needs of half our youth. Cincinnati, for example, is in a State which enrolls 7000 students in three State universities, and 20,000 in its other colleges. Yet a recent investigation showed that, but for Cincinnati's free tuition, 1000 of the 1500 resident students in the university could have had no higher education. As they attempt to satisfy a practical-minded democracy, such institutions hold in view vocational requirements. Akron strikes a general note when it remarks that 'as a representative of the new type of municipal institution, the university seeks to develop its units or departments, not in accordance with the historical meaning of the term 'university,' but rather into such schools as may train the high-school graduate in various practical and technical callings.' Finally, they tend to make much of the duty of serving the city directly, and of the advantages accruing from such service. Cincinnati last year held an exposition to show how much she was benefiting city government, schools, industries, and social institutions. Pittsburgh has set itself to fit into, 'the mold which is formed for it by the needs of its constituency.'"

For the purpose of studying the problem of the city in its broadest sense, and the training of men and women for the State, a new organization, called the Association of Urban Universities, has been formed. The first president of the association is President Charles W. Dabney of the University of Cincinnati. Other institutions represented are Universities of Boston, Buffalo, Denver, Rochester, Toledo, the College of the City of New York, James Millikan University, and Reed College.

The Carnegie Foundation for the Advancement of Teaching. The eighth annual report of the president of the Carnegie Foundation for the Advancement of Teaching covering the year ending June 30, 1913, shows a general endowment fund of $14,075,000, and a special endowment of the division of educational inquiry of $1,250,000. The income from the general endowment fund was $694,195.81; the expenditures were $640,601.38, of which $600,390.01 was for retiring allowances and pensions, and $40,211.37 for administration and publication. The income from the special endowment fund was $44,300.08, and the expenditures $17,830.39. Twenty-four retiring allowances to professors and nine widows' pensions were granted during the year, making the total number of allowances in force 403. The average of all retiring allowances was $1703.51. The total distribution from the beginning has been $2,936,927. Seventy-five institutions are in the accepted list. The Rensselaer Polytechnic Institute was the only institution admitted during the year.

During the year the trustees adopted an important amendment to the rules covering retiring allowances to those professors who elect to teach part time with diminished pay after the age of 65. The amendment is as follows: "In reckoning the amount of the retiring allowance the average salary for the last five years of service shall be considered the active pay. In case a professor agrees with his institution to continue at any time after reaching the age of 65 part-time work for a diminished salary, he may do so, and upon his retirement his allowance shall be computed upon the basis of the last five years of full pay. In the case of his death in this interval the pension of his widow shall be reckoned upon the same basis." Hitherto the retiring allowance has been based upon the average salary paid for the last five years regardless of what amount of service they represent. The report states that "not infrequently it happens that such a man, by concentrating his energies upon a smaller number of courses, may, from his long experience, render most useful service. The rules of the Foundation, as they were framed hitherto, made it practically impossible for this arrangement to go into effect without correspondingly reducing the amount of the teacher's pension. A professor was, under the rules, obliged either to continue full duty or to retire altogether."

The president discusses many other matters such as the foundation of the Division of Educational Enquiry, the Vermont Survey, the Status of Legal Education, the Decreasing List of Medical Schools, and certain New Pension Systems. Part II of the report deals with current educational problems. In a section entitled "The Evolution of College Entrance Requirements" the president calls attention to the need for further improvement by showing that only 55 per cent of the students now in our colleges are high school graduates. Politics and education in Iowa receive thorough treatment. In a section entitled "Improvements in the Financial Status of College Teachers" the salary of the full professor in the institutions associated with the Foundation is shown to be $3000. During the last five years the salaries of instructors have risen by about $80. Those of junior professors show a gain from $120 to $225. Those of full professors show an increase from $125 to $350.

The last section of the report is a frank criticism of contemporary college catalogues. The report says that "It is not too much to say that if the 1000 and more colleges of the country were judged upon the basis of the literary excellence, the clearness, and the honesty of their catalogues, the showing would be an extremely embarrassing one. . . . The time has come when those colleges which value their own scholarly standing and believe that they are offering only sincere and fruitful courses of study should give this matter earnest attention."

Changes in University Administration. On Jan. 6, 1914, the corporations of the Massachusetts Institute of Technology and of Harvard University ratified an agreement which established coöperation between the two institutions. The University of Pennsylvania School of Medicine admitted women for the first time in September, 1914. The merger of the Starling-Ohio Medical College with the Ohio State University became effective in September, 1914.

Foreign Students at American Universities and Colleges. An investigation conducted by the United States Bureau of Education shows that there were 4222 foreign students in attendance at 275 different universities and colleges in the United States in 1913. New York had 697 of these students in 19 different institutions, Pennsylvania had 506 students in 22 institutions, and Massachusetts 422 students in 15 institutions. Foreign students are to be found in all the States except Delaware, Oklahoma, Wyoming, Arizona, and Idaho.

The largest group of these students was studying Arts and Sciences. The total in these courses was 1700. Engineering with 801 students is the second most popular subject, then follows medicine with 339 students, dentistry with 303 students, agriculture with 275 students, and theology with 256 students.

There are representatives of 51 foreign countries, not counting the dependencies of the United States. Those sending the largest contingents, together with the number of students credited to each, follow: Canada, 653; China, 594; Japan, 336; Mexico, 223; Great Britain and Ireland, 212; Cuba, 209; India, 162; Finland, 124; Germany, 122.

It is interesting to note that the State universities and university schools of France had, on Jan. 15, 1913, 5559 foreign students. In the 21 German universities, during the winter semester of 1914, there were 4427 students from other European countries, and 588 students from other countries. From North and South America there were 348 students.

The General Education Board. The General Education Board was founded by John D. Rockefeller, to promote education within the United States, "without distinction of race, sex, or creed." On Jan. 1, 1915, the board made public the first detailed report of its work during the 12 years of its existence. The following extracts from the board's advance announcements indicate the character and scope of work undertaken:

"At the present time the board's resources are valued at $33,939,156, of which $30,918,063 is general endowment and $3,021,093 reserve fund. The gross income from these funds for the year 1913–14 was $2,417,079.62. In addition the Anna T. Jeanes Fund of $200,000 yielded a gross income of $9231.64.

"The administration of these funds is in the hands of a board consisting of Frederick T. Gates, chairman; Walter H. Page, American ambassador in London; J. D. Rockefeller, Jr.; Albert Shaw, editor *Review of Reviews;* Wallace Butterick; Starr J. Murphy; Edwin A. Alderman, president University of Virginia; Hollis B. Frissell; Harry Pratt Judson, president University of Chicago; Charles W. Eliot, emeritus president Harvard University; Andrew Carnegie, Edgar L. Marston, Wickliffe Rose, Jerome D. Greene, Anson Phelps Stokes, Abraham Flexner; and George E. Vincent, president University of Minnesota.

"Up to June 30, 1914, the board had appropriated directly $15,894,355. Out of funds held by the board 'to be applied to such specific objects within the corporate purpose of the board' as Mr. Rockefeller or Mr. John D. Rockefeller, Jr., might direct, the following gifts have been made:

(a) To the University of Chicago	$13,554,343.99
(b) To the Rockefeller Institution for Medical Research	10,267,022.10
(c) To the General Education Board ..	1,239,830.38
	$25,061,196.47

"Thus the total benefactions already distributed to outside institutions through the medium of the General Education Board have amounted to $39,715,720.

"The board's appropriations up to June 30, 1914, have been as follows:

Colleges and universities	$10,582,582.80
Medical schools	2,670,874.11
Negro colleges and schools	699,781.13

Miscellaneous schools	159,991.02
Professors of secondary education	242,861.09
Southern Education Board	97,126.28
Rural School agents (both races)	104,448.18
Farm demonstration work—South (including boys' and girls' clubs)	925,750.00
Farm demonstration work—Maine and New Hampshire (including boys' and girls' clubs)	50,876.45
Rural organization work	37,166.66
Educational conferences	18,108.28
Administrative expenses	304,794.99
Total	$15,894,855.89

"The gifts of the General Education Board to colleges and universities are invariably part only of the sum which the institutions in question have undertaken to raise.

"Up to June 1, 1914, the General Education Board made contributions to 103 colleges and universities; to 19 of these it has made a second appropriation. The sums pledged by the board amount to $10,582,591.80; the institutions assisted have themselves undertaken to raise additional sums aggregating almost $40,000,000.

"The appropriations by geographical sections were as follows:

	Appropriations of Board	*Entire sum to be raised*
To Southern States	$ 3,052,625	$12,199,677
To Western States	3,967,781	19,374,522
To East. and Md. States	3,562,185	18,810,124
Totals	$10,582,591	$50,384,323

"Through the activities of the General Education Board, therefore, $50,384,323 will shortly have been added to college and university resources. Nor does this sum represent the full outcome of the board's work in this direction, for it does not include bequests written into the wills of those whose interest in a particular institution was first aroused or much deepened by campaigns undertaken to increase endowment.

"A recent report received from institutions which have been assisted discloses the fact that the total increase in the endowment of colleges to which the board has made pledges, determined as from the dates of the several pledges, is already $20,760,292. The total cost of new buildings for the same period is $6,302,953.

"It happens very often that the General Education Board is unable to see its way clear to make contributions that have been requested. It is believed that adverse decisions of this kind have as a rule been satisfactorily explained to the applicants, so that, even if the reasons may not be concurred in, the disinterested desire of the board to do justice has not been questioned.

"Decisions of this kind may be based on one or more of several reasons; the board may have already contributed more than a fair share to the section represented; the institution may occupy a more or less unpromising situation; it may be in too close proximity to a stronger institution; it may be without backing; it may be one of several denominational institutions which ought to be merged rather than separately developed.

"Some of these schools may at the moment be performing a useful function; yet unless they appear to be necessary factors in a well-organized and well-distributed permanent system of higher education, the General Education Board is compelled to pass them by."

A section of the report deals with aid for negro education. It says in part:

"Between 1906 and 1912, 74 schools in Alabama were thus aided; toward buildings and equipment, costing $54,153, the Jeanes Fund of the General Education Board contributed $18,888; negro patrons of the schools, $35,265; toward $17,690 spent in maintenance in the year 1910–11, the Fund gave $1068, county boards $9070, and negro patrons $7552.

"At the present time schools are fortunate if they obtain as principals and teachers the graduates of one of the better industrial schools for negroes. The General Education Board has therefore assisted some of the more efficient of these industrial training schools as follows:

Hampton Institute	$138,000.00
Tuskegee Institute	135,483.48
Spelman Seminary	196,912.88
Other institutions	85,384.77
Total	$555,781.13

"With the same end in view, gifts toward improved physical equipment have been made to a number of secondary schools owned or controlled by negroes themselves."

Separate sections of the report deal with girls' canning and boys' corn clubs, and with the educational work carried on among the farmers of the South, an activity which has now been taken over by the Federal government.

GIFTS AND ENDOWMENTS. Among the noteworthy gifts announced by institutions during 1914 were the following: The Boston School of Medicine for the establishment of a maternity hospital, $100,000; Bowdoin College, $500,000 from the estate of Edwin B. Smith; The Catholic University of America, the greater part of the estate of $1,000,000 left by Theodore B. Basselin; Columbia University, $135,750 from W. K. Vanderbilt for the purchase of land adjoining the university property; Cornell University, $160,000 from an anonymous giver, for building dormitories; the will of Albert D. Hermance provides a trust fund of approximately $500,000 for the maintenance of graduates of the Williamsport, Pa., high school at Cornell University; Lafayette College, $100,000 by the will of William Runcle; Lehigh University, about $800,000 from the estate of Asa M. Packer; Massachusetts Institute of Technology, $200,000 by the will of Caroline L. W. French; Northwestern University and Wesley Hospital, $1,000,000 from James Deering to make the hospital a teaching hospital under Northwestern University; Oberlin College, $125,000 from an anonymous giver for the building of a new art building; the University of Pennsylvania, $200,000 from the estate of William B. Irvine; the University of Illinois, land valued at $200,000 by Capt. Thomas J. Smith; the University of California, $615,750 from various givers for building a new teaching hospital for the University of California Medical Department; St. Louis University Medical School, by the will of James Campbell, his entire estate after the death of his heirs, who have a life interest in it. The present value of the estate is estimated to be from $15,000,000 to $40,000,000. Yale University announced the following gifts: $350,000 to develop the divinity school; $500,000 under the will of Lord Strathcona and Mount Royal; $400,000 by the Lauder family for Yale Medical School. The Medical School of Western Reserve University receives by the will of Liberty E. Holden a bequest estimated to be nearly $1,000,000. Teachers College, Columbia University, will receive $500,000 by the will of Grace H. Dodge.

Wellesley College completed one of the most important endowments of the year. In 14 months the college raised $2,430,000. Baker University completed an endowment fund of $500,000; Central College, Fayette, Mo., increased its productive endowment by $300,000. Grinell College raised $500,000; and Gustavus Adolphus College completed an endowment fund of $250,000. See also GIFTS AND BEQUESTS.

NEW INSTITUTIONS AND DEPARTMENTS. Mr. Asa G. Chandler gave $1,000,000 and the citizens of Atlanta guaranteed $5,000,000 more for the establishment of a new Atlanta University under the auspices of the Methodist Church. The Sheffield Scientific School of Yale University announced two gifts of $100,000 each for the development of a graduate course in preparation for business and business administration. The University of Pennsylvania formally opened a new School of Education with 45 professors and instructors.

NEW PRESIDENTS. An unusually large number of college presidents were elected during 1914. Among them are the following: John Carey Acheson, LL.D., president of Kentucky College for Women, was made president of Pennsylvania College for Women; Dr. William O. Allen of Drury College, Springfield, Mo., was elected president of Doane College, Crete, Neb.; Dr. William Waddell Boyd was elected president of the Western College for Women, Oxford, Ohio; Dr. M. A. Brannon, professor of biology in the University of North Dakota and dean of the College of Liberal Arts, was elected president of the University of Idaho; Dr. A. R. Brubacher, superintendent of schools, Schenectady, was elected president of the Albany Normal College; Dr. Hermon Carey Bumpus, business manager of the University of Wisconsin, and formerly director of the Museum of Natural History, was elected president of Tufts College; Prof. William Spenser Currell of Washington and Lee University was elected president of South Carolina State University; Dr. E. A. Fath, director of Beloit College Observatory was elected president of Redfield College, Redfield, S. Dak.; Dr. Frank J. Goodnow, Eaton professor of administrative law and municipal science at Columbia University, was elected president of the Johns Hopkins University; Dr. Oscar J. Johnson was elected president of Gustavus Adolphus College, St. Peter, Minn.; Dr. Thomas H. MacBride, professor of botany, was elected president of the Iowa State University; Dr. Henry Noble MacCracken, professor of English at Smith College, was elected president of Vassar College; Dr. John Henry MacCracken, syndic and professor of politics in New York University, was elected president of Lafayette College; Dr. Sidney Mezes, president of the University of Texas, was elected president of the College of New York; Elwood C. Perisho, dean of the College of Arts and Sciences of the University of South Dakota, was elected president of State College of Agriculture and Mechanical Arts at Brookings, S. Dak.

RESOURCES. The total income of the universities, colleges, and technological schools for the year 1912–13 was $109,590,855 derived as follows: For tuition and other educational services, $20,919,176; for room rent, $2,150,555; for board, etc., $6,993,560; from productive funds, $16,569,808; from State and municipal appropriations, $19,049,823; from the United States government, $5,443,210; from private benefactions for increase of plant, $4,476,581, for endowment $16,045,474, for current expenses $4,129,903; from all other sources, $7,941,211. Six institutions reported gifts above $1,000,000 received during 1912–13. They were University of California, $1,245,962; Yale University, $1,418,936; University of Chicago, $1,307,928; Massachusetts Institute of Technology, $1,071,608; Columbia University, $1,421,804; and Trinity College, $1,203,145. The productive funds of all the institutions amount to $350,038,287. Six of the leading colleges for women—Bryn Mawr, Mt. Holyoke, Radcliffe, Smith, Vassar, and Wellesley—had a total endowment of $8,661,841 in 1912. It is noteworthy that this is less than the endowment of Cornell University, less than a half of the endowment of the University of Chicago, and less than one-third of the endowment of Harvard University or Columbia University.

UNIVERSITY EXTENSION IN THE UNITED STATES. University extension teaching is a comparatively new development in the United States. Its beginning is said to have been in 1889 when Teachers College, Columbia University, announced to the teachers of New York City and the adjoining towns the offer of certain elementary courses in science. The first State appropriation for university extension was made by New York in 1891.

According to a bulletin entitled "University Extension in the United States," issued by the Bureau of Education, there are at present no less than 51 institutions of collegiate grade in which extension teaching other than agricultural is to be found. There are in addition 52 institutions with no organized extension work but with teaching along extension lines. The appropriation for extension teaching in 1912–13 was over $500,000.

At first "the English plan of lectures, class work, syllabi, collateral reading, and more or less rigid examinations conducted by university professors with little if any individual relation" was employed. It was found that these methods were not well adapted to the large part of the student body in America. "As this fact came to be recognized modifications of the original method added correspondence study and class work under less formal conditions." Thirty-two institutions now conduct correspondence courses. All but five of these grant credit toward a degree for work completed by correspondence. That this method of teaching is popular is evidenced by the fact that the University of Wisconsin in 1913 had 5375 students enrolled in such courses while the Pennsylvania State College had 4825, and the University of Chicago 3182 such students.

The enactment of the *Smith-Lever Extension Act* has served to focus attention upon the possibilities of extension teaching. The act was approved by the President, May 8, 1914. It provides for the granting of Federal funds to the State agricultural colleges to aid in diffusing among the people useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same. Briefly stated the act provides that each State having an agricultural college shall receive $10,000. Above this amount the Federal government will under certain conditions

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FOUR UNIVERSITY OR COLLEGE PRESIDENTS ELECTED IN 1914

duplicate amounts raised within the State. The first year $600,000 is appropriated. This $600,000 will then be increased by $500,000 for each succeeding year for seven years or until the total annual sum appropriated will be $4,580,000.

The act defines the uses to which the Federal moneys shall be put as follows: "That cooperative agricultural extension work shall consist of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstrations, publications, and otherwise; and this work shall be carried on in such manner as may be mutually agreed upon by the Secretary of Agriculture and the State agricultural college or colleges, receiving the benefits of this Act."

In his presidential address before the Association of American Agricultural Colleges and Experiment Stations, Dr. A. C. True said, "The Extension Act has rounded out the Federal legislation providing for the endowment along agricultural lines of the institutions whose establishment was made possible by the Land-grant Act of 1862, not so much by liberal grants of money for extension work as by recognition of such work as a legitimate and necessary function of these colleges which ought to be performed throughout the nation." See also Education in the United States.

UNIVERSITY BUILDINGS. See Architecture.

UNIVERSITY EXTENSION. See Universities and Colleges under section entitled as above.

UPPER SENEGAL AND NIGER. One of the colonies of the French West Africa government-general. The capital is Bamako, with 7052 inhabitants. Ouagougou has a population of 19,332, Kayes 8952, Ségou 8405, Djenné 6552, Timbuctoo 6699. Cotton cultivation is systematically pursued, and the natives are adepts in the manufacture of cotton textiles. Rice, corn, millet, ground nuts, manioc, tobacco, etc. are grown for local consumption. Rubber and gums are gathered, and the forests abound in valuable timbers. Grazing is carried on, and horses, donkeys, cattle, dromedaries, and ostriches are raised in great numbers. The total imports by the Senegal were valued, in 1912, at 9,803,000 francs, as compared with 17,500,000 francs in 1911; the exports were valued at about 4,000,000 francs—ground nuts 1,100,000 francs, rubber 900,000, gold 600,000, gums 555,000. The trade by way of the Conakry-Kourassa Railway and the Kourassa-Bamako is ascertainable approximately only, being estimated at 1,500,000 francs imports, and 500,000 francs exports. The imports by way of the Saharan frontiers consist chiefly of salt—1,500,000 francs in 1912; the exports, consisting mainly of cereals, textiles, and seeds, were valued at 500,000 francs. Imports by southern routes (Senegal, Guinea, Ivory Coast, and Gold Coast) amounted to nearly 4,000,000 francs, chiefly kola nuts; exports consist of live animals and animal products, and reach an average annual total of about 8,000,000 francs. The railway from Kayes to Koulikoro (553 kilometers) reaches the Niger at Bamako. There is a branch from Kayes to Medine, 12 kilometers; and another, 44 kilometers, connects Kayes with Ambidedi. The Lieutenant-Governor in 1914 was J. Clozel. See French West Africa.

UPTON, Winslow. An American astronomer and educator, died Jan. 9, 1914. He was born in Salem, Mass., in 1853, and graduated from Brown University in 1875. He took a graduate course in astronomy at the University of Cincinnati in 1877, and in the same year he became assistant at the Harvard Observatory, remaining in that post until 1879 when he was appointed assistant engineer of the United States Lake Survey. From 1880 to 1881 he was computer at the United States Naval Observatory and was computer and assistant professor in the United States Signal Service from 1881 to 1883. In the latter year he was appointed professor of astronomy at Brown University, and became dean of the university in 1899. He was a member of the United States Eclipse expeditions in 1878 and 1883, and of four private eclipse expeditions—1887, 1889, 1900, and 1905. From the construction of the Ladd Observatory in 1891, he was its director, and was for several years attached to the Harvard Observatory station at Arequipa, Peru. He was the author of *Star Atlas* (1896), and other works of astronomy.

URANIUM. See Radium, Uranium, and Vanadium Ores.

URUGUAY. A South American republic, on the Atlantic coast between Brazil and Argentina. Capital, Montevideo.

Area and Population. The area of the 19 departments comprising Uruguay is stated at 186,925 square kilometers (72,172 square miles); a recent planimetric calculation, however, makes the area 178,700 square kilometers (68,996 square miles). The census of Oct. 12, 1908, returned a population of 1,042,686 (males, 530,508; females, 512,178); estimate of Dec. 31, 1912, 1,225,914. Of the total in 1908, 861,464 (82.52 per cent) were natives, and 180,722 (17.38 per cent) were foreign-born. The foreigners included 62,357 Italians, 54,885 Spaniards, 27,789 Brazilians, 18,600 Argentines, 8341 French, 1444 Turks and Syrians, 1406 Swiss, 1324 British, 1112 Germans, 1109 Austro-Hungarians, and 636 Portuguese. The department of Montevideo in 1908, with an area of only 664 square kilometers (256 square miles), had 309,231 inhabitants. The population of the city of Montevideo in 1908 was 291,465 (estimate of Dec. 31, 1913, 377,994); Paysandú, 20,953; Salto, 19,788; Mercedes, 15,667; Minas, 13,345; Melo, 12,355; San José, 12,297; Rocha, 12,200; Florida, 10,606; Durazno, 10,597; Rivera, 8986; San Eugenio, 8857; Canelones, 8523; Trinidad, 8317; Colonia, 8021; Treinta y Tres, 7718; San Fructuoso, 7546; Fray Bentos, 7359; Maldonado, 4421. Marriages in 1912 and 1913 respectively numbered 7541 and 7330; births (including stillbirths), 39,171, and 41,778; deaths (including stillbirths), 16,745, and 16,837; stillbirths, 1330, and 1463. Of the living births in 1912, about 26 per cent were illegitimate. In 1911, the reported number of arrivals was 195,386, and departures, 170,922; in 1912, 248,085, and 222,157.

In 1911 there were 934 public primary schools, with an enrollment of 82,441 pupils. There are several secondary, normal, and special schools, and at Montevideo a university with faculties of mathematics, social sciences, law, medicine, veterinary medicine, agriculture, and commerce. Roman Catholicism is the State religion.

INDUSTRIES AND COMMERCE. Uruguay is a country of much agricultural promise, but the chief source of national wealth at present is the grazing industry, which furnishes in value the great bulk of the exports. The live stock census of 1908 returned 8,192,602 cattle, 556,307 horses, 17,671 mules, 4428 asses, 26,286,296 sheep, 180,099 swine, and 19,951 goats. The number of cattle slaughtered in 1913 for export was reported at 485,806.

The table below shows the area, in hectares, and production, in metric quintals, of cereal crops, linseed, tobacco, and vines in the years 1911–12 and 1912–13, with the average yield per hectare in 1912–13:

	Hectares		*Quintals*		*Qs.*
	1911-12	*1912-13*	*1911-12*	*1912-13*	*ha.*
Wheat	323,244	330,252	2,383,281	1,486,817	4.5
Corn	239,118	254,666	2,022,831	1,357,197	5.3
Oats	34,656	20,411	264,938	126,598	6.2
Barley	2,523	1,389	18,292	8,247	5.9
Rye	66	22	552	184	8.4
Linseed ...	57,698	56,898	228,169	330,730	5.8
Tobacco ...	1,604	1,820	19,838	21,779	12.0
Vines * ...	6,116	6,108	105,506	194,305	31.8

* Yield in hectoliters of wine.

In 1913–14, there were under wheat 368,846 hectares, yielding 1,602,277 metric quintals, the average yield per hectare being 4.3 quintals; oats, 39,434 hectares, 268,530 quintals, 6.8 average yield; barley, 5685 hectares, 35,846 quintals, 6.3 average yield; rye, 183 hectares, 1179 quintals, 6.4 average yield; linseed, 51,893 hectares, 244,515 quintals, 4.7 average yield. Neither mining nor manufacturing has attained any considerable development.

Imports of merchandise for consumption and exports of domestic produce have been reported as follows, in thousands of pesos (gold):

	1907	*1908*	*1909*	*1910*	*1911*	*1912*
Imports .	37,471	37,456	37,157	40,814	44,798	49,880
Exports ..	34,912	40,841	45,109	41,028	44,587	53,042

Principal classified dutiable imports in 1911, in thousands of pesos: food products, 8513; textiles and manufactures, 8372; iron and steel, and manufactures, 5170; stone, glass, pottery, etc., 4970; woods and manufactures, 2826; beverages, 2139; oils, 1399; chemicals, etc., 1379; tobacco, 1271.

Exported produce of the grazing and meat industry were valued at 36,480,838 pesos in 1908, 40,190,056 in 1909, and 37,814,205 in 1910. Classified exports of Uruguayan produce in 1912 were: produce of the grazing and meat industry, 44,037,038 pesos; agricultural products, 2,051,324; mineral products, 2,189,833; produce of fishing and hunting, 107,691; other, 132,851; ships' supplies, 228,845; increase by market value, 4,294,273; total, 53,041,855. In 1912, the exported produce of the grazing and meat industry was divided as follows: live animals, 1,032,612 pesos; meats and extracts, 5,725,630; grease and tallow, 1,748,912; wool, 25,900,908; hides and skins, 8,989,415; hair and bristles, 217,338; bones and ash, 191,960; other products, 11,249; residuary products, 219,014; total, 44,037,038. The jerked-beef export in 1912 amounted to 38,250 tons, valued at 3,059,984 pesos. Exports of oil-producing grains in 1912 were valued at 886,741 pesos; flour, 862,978; hay and fodder, 193,686; vegetables and fruits, 100,112.

In 1911, imports from the United Kingdom were valued at 12,162,000 pesos; Germany, 7,591,000; United States, 5,453,000; Argentina, 4,013,000; France, 3,800,000. Exports to France in 1912 were valued at 8,462,632 pesos; Germany, 7,601,810; Belgium, 7,595,643; Argentina, 7,068,494; United Kingdom, 6,294,127; Brazil, 3,659,882; United States, 2,568,057; total, including other countries, increase by market value (4,294,273 pesos), and ships' supplies, 53,041,855 pesos.

COMMUNICATIONS. The length of railway open to traffic at the end of 1912 was 2638 kilometers; under construction, 776 kilometers. During the year application was made to the Uruguayan Ministry for Public Works for authority to survey for a railway starting from Pan de Azucar, crossing the valley of that name and proceeding in the direction of Minas. It was stated that this line would open up the marble and mine stone quarries, and other mineral deposits, and would connect with another line 10 miles long between Pan de Azucar and the port of Piriapolis. Telegraphs in 1912: 57 offices, with 8600 kilometers of wire; radiotelegraph stations, 4, and 7 on board ship. Post offices in 1912, 1129.

FINANCE. The standard of value is gold. The monetary unit is the peso, whose par value is $1.03424. Estimated revenue and expenditure for the fiscal year 1913 were 35,142,360, and 35,133,812 pesos respectively. The budget submitted to the congress for the fiscal year 1914 showed estimated revenue of 36,597,360 pesos, and estimated expenditure of 36,516,877 pesos. Estimated customs revenue, 17,600,000 pesos. The larger estimated disbursements for the fiscal year 1914 were: on account of public debt, 18,360,042; war and marine, 4,695,162; interior, 3,371,621; public instruction, 3,193,162. Public debt Dec. 31, 1913, foreign consolidated, 118,487,935 pesos; international, 2,190,500; internal, 15,620,423; total, 136,298,858.

ARMY. A small standing army recruited by voluntary enlistment is maintained, where service is from 2 to 5 years with reëngagement up to the age of 44. There are 17 battalions of infantry, 4 companies of rifles, 16 cavalry regiments, 3 field artillery regiments of 3 batteries each, a fortress artillery company, a machine gun company, and a bearer company, numbering in all on a peace basis 10,400 officers and men, and capable of being raised to a nominal war strength of 50,000. Service in the national guard or militia is compulsory, being divided into 3 bans or classes, the first embracing all men between the ages of 17 and 30, forming a more or less organized force of 15,000 to 20,000, that could take the field with the standing army. The second ban of men between the ages of 30 and 45 years is the departmental or provincial national guard designed primarily for local service, but its members may be drafted to supply losses in the mobile army in war time. Finally all the men between 19 and 45 form the "territorial" force liable only for garrison duty in their own districts. All three bans have an estimated strength of nominally about 170,000 men. In addition there is a police force with an established strength of 5000.

NAVY. The navy includes one old cruiser

(*Montevideo*, 1887), of 2200 tons; one torpedo cruiser (*Uruguay*, 1910), of 1500 tons; one gunboat (*18 de Julio*), of 300 tons; one school ship (*Suárez*), of 300 tons; and three dispatch boats.

GOVERNMENT. The legislative power is vested in the General Assembly, or Congress, consisting of the Senate and the House of Representatives. Senators, 19 in number (one for each department), are elected for six years by indirect vote. Representatives, 90 in number, are elected for three years by direct vote. The president is elected for four years by the General Assembly and is not eligible for the next succeeding term. He is assisted by a responsible ministry of seven members. President for the term ending March 1, 1915, José Batlle y Ordóñez. He was president in 1903–07. President-elect for the term ending March 1, 1919, Blas Vidal.

HISTORY. In the general election of Nov. 30, 1913, the Government party was returned with 69 seats, the Nationalists with 20; and 1 Independent was elected. Neither the Socialists nor the faction of the "Colorado" party opposed to President Batlle y Ordóñez obtained any representation in the new Congress. When Congress was convened in February, 1914, Dr. Blas Vidal was elected President of the Senate, and Vice-President of the republic for one year. In his message to Congress, President Ordóñez declared that Uruguay had successfully weathered the monetary crisis caused by the difficulty of borrowing money abroad. An arbitration treaty was signed with Italy. See also INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

UTAH. POPULATION. The estimated population on July 1, 1914, was 414,518. The population in 1910 was 373,351.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	...1914	12,000	420,000	$315,000
	1913	10,000	340,000	288,000
Wheat	..1914	291,000	7,275,000	6,256,000
	1913	265,000	6,420,000	4,687,000
Oats	1914	95,000	4,750,000	2,042,000
	1913	90,000	4,140,000	1,656,000
Barley	..1914	82,000	1,440,000	720,000
	1913	80,000	1,155,000	635,000
Potatoes	1914	20,000	2,800,000	1,680,000
	1913	20,000	3,600,000	2,088,000
Hay	1914	406,000	a 1,116,000	8,598,000
	1912	390,000	909,000	8,272,000

a Tons.

MINERAL PRODUCTION. Utah is unique in the diversity of its mineral production, especially of precious and semiprecious metals. It does not rank first in the production of any of these metals, but it stands well among the leaders in the production of gold, silver, copper, lead, zinc, and vanadium minerals. It ranks second in the production of silver, third in lead, fourth in copper, sixth in gold, and seventh in zinc. The recoverable copper content of the ores mined in Utah in 1913 was 161,445,962 pounds, valued at $25,024,124, compared with 137,307,435 pounds, valued at $22,655,735 in 1912. The production of silver decreased in 1913, the recoverable content of the ore mined being 13,084,835 fine ounces, valued at $7,903,240, compared with 13,835,903 fine ounces, valued at $8,509,080 in 1912. The recoverable lead content of the ores mined increased from 70,156 short tons, valued at $6,314,001, in 1912, to 83,063 tons, valued at $7,309,579, in 1913. The output of gold declined from 206,360 fine ounces, valued at $4,265,851, in 1912, to 172,468 fine ounces, valued at $3,565,229, in 1913. The total value of the metal production in 1913, including a small amount of iron and vanadium ores, was $44,916,348. The State is an important producer of coal. There were mined in 1913, 3,254,828 tons, valued at $5,384,127, compared with 3,016,149 short tons, valued at $5,046,451 in 1912. The output of coal in the State in 1914 is estimated to have fallen off about 10 per cent from the production of 1913. The manufacture of Portland cement is an industry of very recent development in the State. In 1913 the output was 950,469 barrels, valued at $1,233,421, compared with 760,668 barrels, valued at $937,119 in 1912. The value of the clay products, exclusive of pottery, declined slightly, from $724,978 in 1912, to $708,906 in 1913. The total value of mineral products in 1913 was $53,606,520, compared with $51,004,942 in 1912. The value of the gold, silver, copper, lead, and zinc in the mines of the State in 1914, according to the estimates of the United States Geological Survey, showed a decrease in value of about $6,900,000. The total value is estimated at about $38,000,000. There was an increase in the quantity of lead produced, but decreases in gold, silver, copper, and zinc estimated as spelter. The copper output decreased about 4 per cent, while gold decreased over 7 per cent, and silver more than 10 per cent. Lead showed an increase of over 9 per cent.

TRANSPORTATION. The total railway mileage of main track in the State in 1914 was 2406. During the year 74 miles of main track were constructed. Lines having the longest mileage are the Denver and Rio Grande, 762; S. P., L. A., & S. L., 483; Central Pacific, 273; Oregon Short Line, 242; Western Pacific, 121; and Union Pacific, 75. The total mileage of electric roads in the State was 304. During the year the Southwestern Pacific Railroad Company was incorporated for the purpose of building a railroad from Palisade, Colo., to a point on the Denver and Rio Grande Railroad, to extend southwestward to San Diego, Cal. It will also run a line to the Grand Canyon of the Colorado River in Arizona, with branch lines running north from the same to tap the iron and coal fields of Washington and iron counties in Utah. A bill was also introduced in Congress by the State Representative authorizing the operation by the government of another long railroad.

EDUCATION. The total school population of the State in 1914 was 117,832. The total enrollment was 94,997, with an average daily attendance of 76,659, and there were 1903 female teachers and 701 male teachers. The average salary of male teachers was $92, and of female teachers $75 per month.

FINANCE. The report of the State Treasurer for the biennial period 1912–14 shows a balance on hand Nov. 30, 1912, of $1,661,701. The receipts for the period amounted to $8,976,625 and the disbursements to $9,225,368, leaving a balance on hand Nov. 30, 1914, of $1,412,958. The funded debt of the State on Nov. 30, 1912, was $1,230,010, and the per capita debt was $3.62.

The bonded debt of the State amounts to $2,410,000.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions under the control of the State, with their population in 1914, are as follows: State Mental Hospital, 501; State Penitentiary, 307; Industrial School for Boys and Girls, 141. The cost of maintenance of these institutions in 1913 was $180,323.

POLITICS AND GOVERNMENT. The State Legislature had no session in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for United States Senator and representatives to Congress. Senator Smoot was a candidate for reëlection, and was renominated in the primaries. He received in the election of November 3, 56,281 votes, compared with 53,128 votes cast for Moyle, candidate of the Democrats and Progressives combined. The total vote cast in this election was 114,766, compared with 112,385 cast in the presidential election of 1912. The Republican vote showed an increase of about 14,000 votes, while the Democratic and Progressive vote showed a falling off of about 9000 votes. The Republicans elected a representative in the first district, and the Democrats and Progressives combined in the second.

STATE GOVERNMENT, 1915. Governor, William Spry; Secretary of State, D. Mattson; Treasurer, J. D. Jewkes; Auditor, L. G. Kelly; Attorney-General, A. R. Barnes; Superintendent of Education, A. C. Nelson; Commissioner of Insurance, Willard Done—all Republicans.

JUDICIARY. Supreme Court: Chief Justice, W. M. McCarty; Justices, J. E. Frick and Daniel N. Straup; Clerk, H. W. Griffith—all Republicans.

STATE LEGISLATURE, 1913.

	Senate	*House*	*Joint Ballot*
Democrats	2	14	16
Republicans	16	31	47
Republican majority	14	17	31

The representatives in Congress will be found in the article UNITED STATES, section *Congress.*

UTAH, UNIVERSITY OF. A State institution for higher education, founded at Salt Lake City, Utah, in 1850. The attendance in all departments in the autumn of 1914 was 1041, and the faculty numbered 80. The university is supported by appropriations from the State Legislature, and from the income from Federal funds, the annual income being about $250,000. There were no notable changes in the faculty during the year. The library contains 38,757 volumes. The president is J. T. Kingsbury, Ph.D., D.Sc.

VACCINATION. See SMALLPOX AND VACCINATION.

VACCINE THERAPY. This method of treating infections, both acute and chronic, was increasingly used during 1914. Among the diseases in which good results are reported are acne, boils, carbuncles, infections of the lymph glands, chronic rhinitis, asthma, hay-fever, bronchitis, empyema, and tuberculosis with mixed infections, all sorts of surgical wounds which do not heal by first intention, pyogenic joint infections, whether acute or chronic, and enteritis and kidney and bladder infections. Gilchrist gives the results of six years' experience with vaccine treatment of skin diseases, comprising in all about 800 cases. While his results have been variable, and he considers it still necessary to pay careful attention to diet and other recognized means of cure, he believes that vaccine therapy constitutes a decided advance in the treatment of many stubborn skin diseases, particularly in cases of relapsing furunculosis, sycosis vulgaris, pustular dermatitis, and folliculitis. Gilchrist has also used ointments embodying vaccine elements successfully, as there seems to be a localized immunity under their use. Certain vaccines, such as that against typhoid fever, have great prophylactic value, but slight curative effect. This appears to be the case in whooping cough. The germ associated with whooping cough is the Bordet-Gengou bacillus, and vaccines made from it, whether autogenous or stock, appear, according to Hess, who treated an epidemic of pertussis in a large infant asylum, to confer a measurable amount of immunity against the disease, but offer no appreciable advantages over the present methods of treatment. Other observers report a decrease in the severity and the duration of the disease under the vaccine treatment, but urge that larger doses should be used than previously given.

VAGRANCY, PATHOLOGIC ASPECTS OF. A study of about 2000 vagrants seeking shelter in the New York Municipal Lodging House threw an interesting sidelight on the question as to whether vagrants are the victims of economic conditions or are, on account of mental or physical handicaps, unfit for work. The common impression is that a great many of the vagrants of large cities become such on account of advancing years or economic changes. It was found, on the contrary, that the majority of men applying for lodging were young, 5 per cent were under 21, only 6.85 per cent over 60. It was found, moreover, that even in New York, the gateway of immigration, the foreign-born did not figure largely among the vagrants; also that there was no remarkable preponderance of vagrants drifting in from country districts. Of the 2000 men examined, only 2 per cent had been in this country less than 3 years, the average residence in the city being 32 years and 4 months. As 36 was the average age of the men altogether, the mass might be considered to have lived practically all their lives in the city. Continuing, the report declares that 35 per cent of vagrants were unemployable, 12 per cent were defective mentally, and about the same percentage were infirm from age or handicapped by the loss of portions of their limbs, 10 per cent were habitual loafers and confirmed drinkers who had lost the habit of work, 65 per cent were willing and able to work, but were hampered partly by lack of skill or the fact that they pursued seasonal trades, leaving them out of work for months at a time. Of these men, 50 per cent were excessive drinkers; 30 per cent admitted that alcoholic liquors were the sole cause of their social condition. Besides taking into account alcoholism and mental defectiveness, a great many cases must be due to discouragement and psychasthenia. When out of work many men become depressed to such an extent that they are unable to resume work when the opportunity presents itself.

VALPARAISO UNIVERSITY. An institution for higher education, founded in 1873, at Valparaiso, Ind. The number of students enrolled in all departments in the autumn of 1914 was 5700, and the faculty numbered 209. Several members were added to the faculty during the year, including Prof. Earl Price in the department of agriculture; Prof. D. L. Snader in the department of architecture; and Prof. S. E. Shideler in the department of education. The productive funds of the university amount to about $350,000. The library contains about 15,000 volumes. The president is Henry B. Brown, A.M.

VANADIUM. See RADIUM, URANIUM, AND VANADIUM ORES.

VANDERBILT, GEORGE WASHINGTON. An American capitalist and scholar, died March 6, 1914. He was born in New Dorp, Staten Island, N. Y., in 1862, the son of William Henry Vanderbilt. He was educated by private tutors and at private schools, entering Columbia University when he was 16 years of age, and four years later graduating with high honors. He showed taste for study and from early manhood took a deep interest in fine arts, acquiring a wide reputation as a book lover. Upon the death of his father in 1885 he inherited about $20,000,000, and when his mother died some years later, he became the owner of the Vanderbilt home on Fifth Av., N. Y. A few years after his father's death he decided to develop the finest country estate in America, and in 1887 began the acquisition of what is now known as the Biltmore estate, near Asheville, N. C. He said that he spent more than $10,000,000 in purchasing tracts of land, in improvements, and in building a beautiful house and gardens. Mr. Vanderbilt engaged Frederick Law Olmstead, the landscape architect, who laid out Central Park, New York City, to take general charge of the development at Biltmore, with Gifford Pinchot as consulting forester. The estate was ready for occupancy in 1897, and from then until his death Mr. Vanderbilt spent the greater part of his time there. The development of live stock was one of his chief endeavors, and Biltmore was stocked with the finest cattle obtainable. Under Mr. Vanderbilt's direction, the estate was made to pay a return on the investment, and besides developing his own land, he taught the neighboring farmers how to obtain the best possible results from their farms. He cut and sold much lumber for which he obtained high prices, and also conducted a nursery, in 1906 contracting to supply Baltimore with nursery stock, shrubs, plants, and bulbs for its parks.

Mr. Vanderbilt also was interested in various institutions in New York City, giving to the city the Thirteenth Street branch of the public library, and presenting to the New York College for the Training of Teachers its site on Morningside Heights, adjoining the site selected for Columbia University. The Vanderbilt Gallery in the American Fine Arts Society Building was a gift from him. In 1898 he was married to Miss Edith Stuyvesant Dresser, daughter of Col. George W. Dresser of the United States Engineering Corps. Mr. Vanderbilt was probably the least known personally of the Vanderbilt family, most of his time not devoted to the development of his estate being given to study and to collecting books and pictures.

VANDERBILT UNIVERSITY. An institution for higher education, founded at Nashville, Tenn., in 1872. The number of students enrolled in the several departments in the autumn of 1914 was 1112, and the faculty numbered 142. There were no notable changes in the faculty during the year, and no noteworthy benefactions were received. The productive funds amounted to about $1,550,000, and the yearly income to about $150,000. The library contains 53,000 volumes. The president is J. H. Kirkland, LL.D., D.C.L.

VAN GOGH. See PAINTING AND SCULPTURE.

VASSAR COLLEGE. An institution for the higher education of women, founded at Poughkeepsie, N. Y., in 1861. There were enrolled in all departments in the autumn of 1914, 1120 students, and the faculty numbered 121. James M. Taylor, D.D., LL.D., resigned the presidency in 1914, and was succeeded by Henry N. MacCracken. Frederick A. Saunders, of Syracuse University, was appointed head of the physics department. There was received during the year the sum of $20,000 for a pavilion in connection with the Swift Infirmary. The productive funds at the close of the collegiate year 1913–14 amounted to $1,655,257. The library contains about 86,000 volumes.

VATERLAND. See SHIPBUILDING.

VENEZUELA, UNITED STATES OF. A republic lying east of Colombia on the northern coast of South America. The capital is Caracas.

AREA AND POPULATION. The area of the 20 States, two Territories, and the Federal District, as officially estimated, is given below in square kilometers (the area cannot be definitely fixed until the settlement of the boundary dispute with Colombia); the population was calculated in 1909 on the basis of the census of 1891, since which date no census has been taken. The density per square kilometer in 1909 is also shown.

	Sq. kil.	*1909*	*D.*
Federal District	1,930	113,204	59
Anzoátegui	43,300	134,064	3
Apure	76,500	29,937	0.3
Aragua	5,600	94,994	17
Bolívar	238,000	55,744	0.2
Carabobo	4,650	169,318	36
Cojedes	14,800	87,935	6
Falcón	24,800	139,110	6
Guárico	66,400	183,930	3
Lara	19,800	189,624	10
Mérida	11,300	88,522	8
Miranda	7,950	141,446	18
Monagas	28,900	74,503	3
Neuva Esparta	1,270	40,197	32
Portuguesa	15,200	96,045	6
Sucre	11,800	92,020	8
Táchira	11,100	101,709	9
Trujillo	7,400	146,585	20
Yaracuy	7,100	85,844	12
Zamora	35,200	62,696	2
Zulia	65,500	150,776	2
Delta-Amacuro *	40,200	7,222	0.2
Amazonas *	281,700	45,097	0.2
Total	1,020,400†	2,323,527	2.3

* Territory. † 393,976 square miles.

According to an unofficial planimetric calculation, the area is 942,300 square kilometers (363,822 square miles). The population as estimated in 1913 was 2,755,685, a figure which some authorities regard as excessive. The estimated population of Caracas is 73,000, Maracaibo 50,000, Valencia 40,000, Barquisimeto 32,000, Puerto Cabello 14,000, La Guaira 12,000. Marriages in 1912 numbered 9365, births 75,892, deaths 65,729, immigrants 9672, emigrants 7991.

Education, nominally free, is in a very backward condition. Primary schools are maintained by the State, and there are some secondary schools and two universities. It is probable that at least 60 per cent of the inhabitants are entirely illiterate. The majority of the population are Roman Catholics.

PRODUCTION AND COMMERCE. Among the forest products are rubber, balata, copaiba, and vanilla. Cultivated crops include coffee, sugar cane, cacao, and cereals. Though large mineral deposits exist, mining is not highly developed, the unsettled political conditions being inimical to foreign investments. Gold, copper, and asphalt are the only minerals worked in commercial quantities. Imports and exports by countries of origin and destination for 1912–13, with totals for comparative years, are shown in the table below (values in thousands of bolivars):

	Imps.	*Exps.*
United States	85,408	51,367
United Kingdom	22,971	8,473
Germany	16,577	20,429
France	18,556	85,825
Netherlands	8,658	3,691
Spain	4,800	7,587
Italy	8,784	1,101
Belgium	739	595
Colombia	62	874
Other	75	1,489
Total, 1912-13	106,575	180,886
" 1911-12	105,677	188,824
" 1910-11	80,179	96,920
" 1909-10	56,641	86,420

The most important articles of import are cotton prints and cotton drill, principally from the United Kingdom. The principal exports are coffee (78,702,000 bolivars in 1912–13), rubber and balata (12,344,000), cacao (12,010,000), hides and skins (11,088,000), gold (6,131,000), aigrettes (1,934,000), copper (1,663,000), asphalt (1,642,000), live animals (1,087,000). There were entered at the ports in the 1912–13 trade 1642 vessels, of 1,548,267 tons. The merchant marine in 1912 included 8 steamers, of 2046 tons net, and 15 sail, of 2432 tons.

COMMUNICATIONS. Inadequate transportation facilities are afforded by railways extending from the coast into the interior, but not connected to form a system. There were in operation in 1911, 925 kilometers. In 1914 it was reported that the new branch line of the so-called Bolivar Railway from Palma Sola to San Felipe was approaching completion. The main line of this system runs from Tucacas to Barquisimeto, with a branch to Aroa, where copper mines are operated with success. It was also reported that the Central Railway was extending its line which runs from Caracas inland and from St. Theresa to Acumara and Ciran, and that the work was in satisfactory progress. Telegraph lines, 7889 kilometers, with 183 stations; telephone lines, 5872 kilometers, with 17,103 kilometers of wire; post offices, 284.

ARMY. There is an active army recruited by voluntary enlistment or impressing, though under the law military service is obligatory between the ages of 18 and 50. The army includes 20 battalions of infantry, each of 400 men, and 7 batteries of artillery, each of 200 men.

FINANCE AND GOVERNMENT. The monetary unit is the bolivar (par value 19.295 cents), and the standard of value gold. In the table below are details of the budget for 1913–14, in thousands of bolivars, with total actual revenue and expenditure in 1910–11:

Revenue	*1000 b.*	*Expend.*	*1000 b.*
Customs	22,916	Interior	12,541
Surtaxes	12,604	For. affairs	1,840
Salt, spirits, etc.	18,200	Finance & debt	13,825
Other	4,508	War & marine	10,942
		Instruction	4,336
		Pub. works	4,454
		Fomento	4,288
		Total ord.	51,728
		Extraordinary	499
Total, 1918-14	52,223	Total 1913-14	52,228
Total, 1910-11	48,553	Total. 1910-11	52,337

The total public debt stood Dec. 31, 1912, at 181,595,112 bolivars, of which 116,797,370 bolivars were foreign debt at 3 per cent, 2,236,000 foreign debt without interest, 61,098,554 internal consolidated debt at 3 per cent, and 1,463,188 internal debt without interest.

The present constitution, which bears date of Aug. 5, 1909, vests the executive authority in a President elected for four years. The legislative body is composed of a Senate of 40 members and a Chamber of Deputies.

HISTORY. On April 19 Congress elected Defense Minister Gen. V. Márquez Bustillos to the provisional presidency of the republic. General Juan Vicente Gomez, the outgoing President, became commander-in-chief of the army. General Bustillos selected the following cabinet: interior, César Zumenta; foreign affairs, Manuel Diaz Rodriguez; finance, Román Cárdenas; defense, Gen. Castro Zavala; fomento, Pedro Emilio Coll; public works, Luis Vélez; education, Felipe Guevara Rojas. A new constitution, prepared by Congress and promulgated by presidential decree, went into effect June 19. The code of mines was substantially revised, August 1. The government had to cope throughout the year with various rebel "armies." In March, 450 insurgents started a new revolt near Morawhanna. General Jose Manuel Hernandez ("El Mocho") returned from New York to lead an insurrection in Venezuela; in July he was reported as conducting a precipitate retreat toward the border of British Guiana. A readjustment of Venezuela's diplomatic representation in 1914 had the effect of making the minister to the United States also minister to Cuba and Mexico; another minister was accredited to Chile, Argentina, and Uruguay; a third was sent to Ecuador, Peru, and Bolivia; while separate ministers represented Venezuela in Brazil and in Colombia. The Venezuelan minister in Paris was accredited to France, Great Britain, Spain, and Germany. See INTERNATIONAL ARBITRATION AND PEACE, *Bryan-Wilson Treaties*.

VERMONT. POPULATION. The estimated population on July 1, 1914, was 361,205. The population in 1910 was 355,956.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	45,000	2,115,000	$1,718,000
	1918	45,000	1,665,000	1,849,000
Oats	1914	79,000	8,858,000	1,547,000
	1913	79,000	8,081,000	1,602,000
Barley	1914	12,000	414,000	310,000
	1913	12,000	884,000	307,000
Potatoes	1914	25,000	4,200,000	1,974,000
	1918	25,000	8,175,000	2,286,000

		Acreage	*Prod. bu.*	*Value*
Hay	1914	990,000	*a* 1,188,000	$17,345,000
	1913	1,000,000	1,280,000	18,560,000
Tobacco	1914	100	*b* 170,000	31,000
	1913	100	155,000	28,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. The mineral production of the State in 1913 was valued at $9,647,985, an increase of more than $500,000 over the figures for 1912. Of the total value, over $9,000,000 was derived from the quarry products—graphite, marble, slate, and limestone. Other mineral products of the State are asbestos, clay wares, and small quantities of copper, gold, and silver, feldspar, mineral paints, mineral waters, sand, gravel, scythestones, talc, and soapstone.

TRANSPORTATION. The total mileage of railroads in the State on June 30, 1913, was 887. The most important lines are the Central Vermont, the Canadian Pacific, the Rutland Railroad, and the Boston and Maine.

EDUCATION. The total school population in 1914 was 79,219, the total enrollment in public schools being 65,137, and the average daily attendance 51,324. The teachers numbered 3100, the average monthly salary of male teachers being $82.61, and of female teachers $51.70. In 1912, an Educational Commission was created for the purpose of investigating educational affairs in the State, and to report thereon. This commission called to its aid the Carnegie Foundation, and issued its report on Oct. 15, 1914. (See EDUCATION IN THE UNITED STATES.) This report contains a definite policy for the State and makes recommendations of a most beneficial character.

CHARITIES AND CORRECTIONS. The institutions under State control include the State Prison, at Windsor; House of Correction, at Rutland; Industrial School, at Vergennes; State Asylum for the Insane, at Waterbury; Soldiers' Home, at Bennington; and the Vermont Sanatorium, at Pittsford. There are also 10 hospitals under control of the State. There is no board or commission of State charities in the State.

FINANCE. The report of the State Treasurer shows a balance on hand on July 1, 1913, of $313,002. The total receipts for the fiscal year were $3,294,681, and the disbursements $3,354,962, leaving a balance on hand on July 1, 1914, of $252,722. The funded debt of the State on June 30, 1913, was $346,631, composed of special debt obligations to public trust funds. These obligations were to the Huntington fund (now transferred to the school fund), and a State certificate issued to the agricultural college.

POLITICS AND GOVERNMENT. There was no meeting of the State Legislature in 1914, as constitutional amendments have changed the date of election from September to November, and the legislative session to the following January. Elections were held for Governor, and other State officers, United States Senator, and for representatives in Congress. Senator Dillingham was a candidate for reëlection, and was opposed by a nonpartisan candidate, Charles A. Prouty, who also received the support of the Progressives, Democrats, and Prohibitionists. For Governor, the Republicans nominated C. W. Gates, the Democrats H. B. Howe, and the Progressives W. J. Aldrich. In the election of November 3, Mr. Gates was elected, receiving 36,972 votes, compared with 16,191 for Mr. Howe, and 6929 for Mr. Aldrich. Senator Dillingham was reëlected, receiving about 35,000 votes, compared with 27,000 for Prouty, the nominee of the other parties. The total vote cast in the election was 62,065, compared with 62,807 for the presidential election of 1912. The Republicans showed a gain of about 13,000 votes, the Democrats a gain of about 1000, and the Progressives a loss of about 15,000. Republican representatives were elected in both districts. The State Senate chosen was solidly Republican, and the House of Representatives was made Republican by an overwhelming majority.

Political interest during the year centred in the work of the educational commission, appointed by Governor Fletcher, and the reorganization of the State courts by the Governor in connection with the movement for simpler justice and revised judicial procedure. The work of adjusting all the laws in the State to the new constitutional amendments pointed to one of the most important sessions ever held by the Vermont Legislature.

STATE GOVERNMENT, 1915. Governor, Charles W. Gates; Lieutenant-Governor, Hale K. Darling; Secretary of State, Guy W. Bailey; Treasurer, Walter F. Scott; Auditor, Horace F. Graham; Attorney-General, Herbert G. Barber—all Republicans.

JUDICIARY. Supreme Court: Chief Justice, George M. Powers; Assistant Justices, John H. Watson, William H. Taylor, Leighton P. Slack, Robert E. Healy; Clerk, ——————all Republicans.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	30	175	205
Democrats	..	30	30
Progressives	..	24	24
Republican majority	30	121	151

The representatives in Congress will be found in the article UNITED STATES, section *Congress*.

VERMONT, UNIVERSITY OF. A State institution for higher education, founded at Burlington, Vt., in 1791. The attendance in all departments in the autumn of 1914 was about 600. There were 100 members in the faculty. There were no notable changes in the faculty during the year. The university is supported largely by appropriations from the Legislature, the annual income being about $210,000. The library contains about 90,000 volumes. The president is Guy Potter Benton, D.D.

VETERINARY ASSOCIATIONS AND SOCIETIES. See VETERINARY MEDICINE.

VETERINARY MEDICINE. An outbreak of the dreaded foot-and-mouth disease, the sixth to occur in the United States, was the most notable event of the year in the field of veterinary medicine.

FOOT-AND-MOUTH DISEASE. On October 18 the Federal Department of Agriculture learned that cattle in the vicinity of Niles, Mich., were infected, and a quarantine was immediately placed upon the counties of Berrien and Cass, in Michigan, and the two adjoining counties of Laporte and St. Joseph, in northern Indiana. Before this was done, however, shipments of infected animals had passed through and infected the Chicago stockyards. Shipments from these yards were traced, and animals found affected with the disease at points in Michigan, Indiana, Ohio, Wisconsin, Pennsylvania, Maryland, New Jersey, Kentucky, Iowa, and Massachusetts. Subsequently points of infection were traced to Montana, Washington, Delaware, New York, Connecticut, Rhode Island, New Hampshire, Virginia, and the District of Columbia.

The disease most unfortunately made its appearance among the purebred stock being exhibited just at this time at the National Dairy Show, which was held in the pavilion near the Chicago stockyards. These animals numbered nearly 800, and though estimated as worth $2,500,000, were priceless, since they represented the best bred dairy stock in the United States.

The five previous visits of this disease to the United States occurred in 1870, 1880, 1884, 1902, and 1908, respectively. The first three of these were comparatively trifling; those in 1902 and 1908 were more grave, and that of 1914 the most serious and extensive of all.

The outbreaks of 1902 and 1908 were found to have had their origin in contaminated vaccine virus, but at the time of writing the source of the 1914 outbreak has not been positively determined. It is suspected, however, to have been introduced with a material used in tanning that is imported from several countries, since swine owned by employees of a small tannery in Niles, Mich., which uses this material, were the first animals known to have contracted the malady.

Since the disease exists in a great part of Europe, in the Orient, in South America, and other places, there is an ever present danger of its introduction into the United States. In Great Britain the disease appeared in 1912, and again in 1913, but was thought to have been stamped out. In February, however, it suddenly appeared at Birkenhead in cattle imported from Ireland, and other cases followed in quick succession among the shipment. In order to prevent the spread of the disease, 2000 head of cattle and 1000 pigs were slaughtered.

In combating the present outbreak in the United States, prompt and vigorous measures were taken by the Department of Agriculture, working in close coöperation with the State authorities; and near the close of the year Congress provided an emergency fund of $2,500,000 to carry on the work. A strict quarantine was at once established and maintained, which prevented the shipment of live stock from States in which the disease appeared, and required that such articles as hides, straw, hay, etc., be thoroughly disinfected before being moved. State quarantines prevented intrastate movement of such sources of infection. As in former outbreaks, the policy of purchasing diseased and exposed cattle at an appraised value, slaughtering and burying them, and thoroughly disinfecting the premises, was followed, one-half of their value being paid by the Federal government, and one-half by the State. An exception was made, however, in the case of the purebred stock exhibited at the National Dairy Show, which was rigidly quarantined. The disease spread rapidly among them, but in a benign form, and aside from some 24 calves, only a single fatality resulted. Aided by the approach of winter weather, rapid progress was made in the control of the disease. At the close of December a large area had been released from quarantine, and there was every prospect of an early eradication of the disease.

Among the complications that arose was the discovery that antihog-cholera serum prepared by a large company operating in the Chicago stockyards, was contaminated with the virus of foot-and-mouth disease. This made the tracing of all infected serum necessary, and the closing of all serum plants in the quarantined territory.

One of the most difficult tasks met with in the work was the disinfection of the Chicago stock yards. This necessitated their closing for a week, and the destruction of myriads of pigeons and rats which infested them and might serve to distribute the infection.

Hog Cholera. A special appropriation by the United States Congress of $500,000 for hog cholera work, of which $50,000 was to be used in regulating the preparation, sale, and importation of viruses, serums, toxins, and similar products intended for the treatment of domestic animals, and thus protect against the use of such as would be dangerous, under strength, or ineffective, was approved Feb. 23, 1914. Experimental areas were selected in 15 States, and approximately $20,000 will be spent in each. The work consists in the making of surveys, production and use of serum on hogs on infected and exposed farms, sanitation and quarantine work, and in organizing farmers to coöperate with the State and Federal authorities. Extensive demonstration and educational work is also being carried on in territory outside the experimental areas.

Dourine. A special appropriation of $100,000 for dourine eradication work was also provided. A large force of inspectors was at once placed in the infected area of western North Dakota and South Dakota, eastern Montana and Wyoming. As many as 1200 samples a day of blood serum drawn from exposed and suspected animals were tested in the laboratory, a total of 51,293 samples having been examined during the fiscal year, of which 2500 gave positive reactions to the complement fixation test for dourine. The animals reacting to this test have been placed in quarantine, and appraised and slaughtered as rapidly as possible.

Splenetic, or Texas Fever, and Tick Eradication. The appropriation made by Congress for the eradication of the cattle tick which transmits the causative organism of Texas fever was increased to $400,000 for the fiscal year beginning July 1, 1914, from $325,000 of the previous year. Of this, $50,000 may be used for live stock demonstration work in areas freed of ticks. In his annual report the chief of the Federal Bureau of Animal Industry states that during the fiscal year ended June 30, 1914, 28,704 square miles were freed from ticks and released from quarantine. The areas released are distributed in 12 States, and vary from 49 square miles in Missouri, to 7910 square miles in Mississippi. In addition to these 12 States, operations are also being carried on in California and Florida. Twenty-one miles of fence were constructed near the Mexican boundary line in order to prevent the infection of territory in Arizona from the ranging or straying of tick-infested live stock into this country from Mexico, and the construction of approximately 55 miles of fence near the southern boundary of California was also completed. In addition to the inspection work and supervision of dippings, educational and demonstration work was carried on.

SCABIES. As a result of the work of eradication of the scab mite carried on by the United States Department of Agriculture in coöperation with State officials, an area of 238,812 square miles in five States was released from the quarantine for scabies in sheep, and 150,659 square miles in seven States from quarantine for scabies in cattle.

TRICHINOSIS. Experiments reported by Ransom indicate that the larvæ of *Trichinella spiralis* in pork quickly succumb to a temperature of 0° F., and suggest the possibility of substituting refrigeration for the microscopical inspection as a preventive measure.

MEASLES. The true measles of food-producing animals are the larval stages of two varieties of tapeworms in man. Experiments in which beef carcasses infested with tapeworm cysts were exposed to a temperature of 12° to 15° F. for six days show the cysticerci to have been killed. As a result, the meat inspection regulations relating to measles have been modified so that slightly infested beef carcasses are now passed for food after a refrigeration for six days at a temperature not exceeding 15° F.

EVENTS. At the Rockefeller Institute for Medical Research a division of animal pathology was established with an endowment of $1,000,000, and Dr. Theobald Smith appointed as its head. Dr. Simon Flexner, director of this Institute, took advantage of the appearance of foot-and-mouth disease to commence studies of it. A gift of $50,000 from Mr. James J. Hill was received by the Institute for the study of hog cholera.

NECROLOGY. Dr. Daniel E. Salmon, who organized the Federal Bureau of Animal Industry and served for more than 20 years as its chief, died on August 30 at Butte, Mont. Among the more important achievements during his service with the Department of Agriculture were the eradication of contagious pleuro-pneumonia of cattle, the establishment of animal quarantine stations, the development of the export and domestic meat inspection service, the suppression of an outbreak of foot-and-mouth disease, the discovery of the cattle tick to be the intermediate agent in the transmission of Texas fever and the detection of the causative agent, and the establishment of a quarantine line against Texas fever. Mention should also be made of the death at an early age of Dr. G. L. Y. Ingram, who, working with Dr. F. W. Twort, first succeeded in cultivating the causative organism of Johne's disease.

Bibliography. Among the works published were the following: E. Abderhalden, *Defensive Ferments of the Animal Organism* (London, 1914); A. Besson, *Practical Bacteriology, Microbiology, and Serum Therapy* (New York, 1913); D. M. Campbell, *Colics and Their Treatment* (Chicago, 1914); E. Courtney, *Manual of the Practice of Veterinary Medicine* (rev. ed., London, 1913); R. R. Dinwiddie, *The Significance of Bacterial Infection in Hog Cholera*, (Arkansas Station Bul. 117, 1914); W. Ernst, *Textbook of Milk Hygiene* (Chicago, 1914); Eugen Fröhner, *Textbook of General Therapeutics for Veterinarians* (Philadelphia, 1914); B. F. Kaupp, *Poultry Diseases and Their Treatment* (Chicago, 1914); V. G. Kimball, *Veterinary State Board Questions and Answers* (Philadelphia, 1914); A. T. Kinsley, *Swine Diseases* (Chicago, 1914); Lungwitz and Adams, *A Textbook of Horseshoeing for Horseshoers and Veterinarians* (11th ed., Philadelphia, 1913); C. F. Lynch, *Diseases of Swine* (Philadelphia, 1914); J. McFadyean et al., *Abortion in Sheep* (Report Dept. Com. Bd. Agr. and Fisheries [Gt. Brit.], Epizoötic Abortion, 1913); J. P. M'Gowan, *Investigation into the Disease of Sheep Called "Scrapie" (Traberkrankheit; La Tremblante), with Especial Reference to Its Association with Sarcosporidiosis* (Edinburgh, 1914); Mohler and Eichhorn, *The Diagnosis of Glanders* (*Amer. Vet. Rev.*, vol. xliv, no. 4, 1914); Montané and Bourdelle, *Anatomie régional des animaux domestiques* (Paris, 1913); Moore and Fitch, *Exercises in Bacteriology and Diagnosis* (Boston, 1914); Neumann and Mayer, *Atlas und Lehrbuch wichtiger tierischer Parasiten und ihrer Ueberträger mit besonderer Berücksichtigung der Tropenpathologie* (vol. xi, Munich, 1914); L. G. Neumann, *Parasites et maladies parasitaires du chien et du chat* (Paris, 1914); Rettger, Kirkpatrick, and Jones, *Bacillary White Diarrhea of Young Chicks* (Connecticut Storrs Station Bul. 77, 1914); Van Es and Schalk, *Avian Tuberculosis* (North Dakota Station Bul. 108, 1914); G. R. White, *Animal Castration* (Chicago, 1914); W. L. Williams, *The Granular Venereal Disease and Abortion in Cattle* (U. S. Dept. Agr. Bul. 106, 1914); K. Winslow, *Veterinary Materia Medica and Therapeutics* (7th ed., New York, 1913).

VICTORIA. A State of the commonwealth of Australia. The area is 87,884 square miles. The census of April 3, 1911, returned a population of 1,315,551, exclusive of full-blooded aboriginals; estimate of Dec. 31, 1912, 1,380,561. The capital is Melbourne, whose population, with suburbs, was 588,971 in 1911.

The Governor in 1914 was Sir Lyulph Stanley, who arrived in Melbourne, Feb. 23, 1914. The ministry, formed in December, 1913, was constituted as follows: Treasurer and premier, W. A. Watt; attorney-general and minister of railways, Donald Mackinnon; chief secretary, John Murray; minister of education and labor, Sir Alexander Peacock; minister of lands, H. S. W. Lawson; minister of agriculture and of water supply, W. Hutchinson. In 1914 Mr. Watt became engaged in commonwealth politics and surrendered his post at the head of the Victorian cabinet to his colleague, Sir Alexander Peacock, who, in June, 1914, became premier; succeeded Sept. 17, 1914, by Andrew Fisher.

The programme of Mr. Watt's Liberal ministry was declared on Jan. 5, 1914, when the Premier, speaking at Essendon Town Hall, announced that (1) the bill for a redistribution of seats in the Legislative Assembly would be abandoned; (2) that a progressive policy would be adopted of spending $3,000,000 a year on the construction of new railways; (3) that $2,500,000 would be borrowed for the building of schools; and (4) that the government would strive with especial earnestness for the development of the country by extending irrigation, by constructing railways, by encouraging immigration, by fostering production, and by facilitating the settlement of farmers on the land. A Workers' Compensation Bill was passed by the Legislative Assembly on January 30. For the Australian events in which Victoria participated, see AUSTRALIA.

VILLIERS, JOHN HENRY, BARON DE. Chief Justice of the Union of South Africa, died Sept.

2, 1914. He was born in 1842 at Paarl, Cape Colony, and was educated at the South African College in Cape Town, afterwards studying at the universities of Utrecht and Berlin. In 1865 he was called to the bar by the Inner Temple. He returned to South Africa in the same year and began practice in Cape Town. He became at once successful in law, and soon entered politics. He was elected a member of the Cape Town House of Assembly in 1866 and was appointed Attorney-General in the ministry formed at the Cape in 1872. Within two years he was promoted to be Chief Justice of the Colony, an office which he held until the formation of the Union of South Africa in 1910, when he became Chief Justice for the whole Union. He was made a baron at the time he became Chief Justice of South Africa and held the first peerage granted to a South African.

VIRGINIA. POPULATION. The estimated population on July 1, 1914, was 2,150,009. The population in 1910 was 2,061,612.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	1,921,000	39,880,000	$31,898,000
	1913	1,980,000	51,480,000	39,125,000
Wheat	1914	779,000	11,296,000	12,200,000
	1913	780,000	10,608,000	10,134,000
Oats	1914	191,000	2,960,000	1,717,000
	1913	195,000	2,960,000	2,180,000
Barley	1914	11,000	286,000	229,000
	1913	11,000	286,000	200,000
Rye	1914	58,000	754,000	679,000
	1913	58,000	713,000	578,000
Potatoes	1914	112,000	7,280,000	5,606,000
	1913	105,000	9,870,000	7,896,000
Hay	1914	650,000	*a* 468,000	8,050,000
	1913	750,000	952,000	14,756,000
Tobacco	1914	175,000	*b* 113,750,000	10,288,000
	1913	200,000	154,000,000	21,406,000
Cotton	1914	45,000	*c* 24,000	885,000
	1913	47,000	28,000	1,467,000

a Tons. *b* Pounds. *c* Bales.

MINERAL PRODUCTION. The value of the mineral production of the State increased from $14,995,842 in 1912, to $17,178,580 in 1913. Virginia ranks relatively high among the States in the variety of mineral substances produced on a commercial scale, but somewhat low on the list in the value of the production. It is the leading State in the production of iron pyrite used in the manufacture of sulphuric acid, and in the production of manganese ore, and is the only State in which rutile is produced. It also ranks first in the production of soapstone, most of which, before being marketed, is manufactured into heat and chemical resisting articles, such as hearthstones, mantels, griddles, sinks, etc. The chief mineral product, however, is coal, which represents something more than 50 per cent of the total value of the mineral production. The output of coal in 1913 was 8,828,068 tons, valued at $8,952,653, compared with 7,846,638 tons, valued at $7,518,576 in 1912. The coal production in 1914, according to the estimates of the United States Geological Survey, showed a decrease of about 1,300,000 tons. This was due almost entirely to the decreased demand from the transportation companies, and from the cotton mills in North and South Carolina. The production of pig iron, the value of which is not included in the total mineral production, amounted in 1913 to 380,508 long tons, valued at $5,310,167, compared with 328,961 tons, valued at $4,364,708 in 1912. The production of coke, whose value was also excluded from the total, increased from 967,947 short tons, valued at $1,815,975, to 1,303,603 tons, valued at $2,840,275. The value of clay products in 1913, exclusive of pottery, amounted to $1,705,651. Third in importance among the primary mineral products of the State is stone, of which the chief varieties quarried are granite and limestone. The total value of the quarry products increased from $877,746 in 1912, to $1,705,651. In the production of iron pyrite Virginia accounted for more than 50 per cent of the total production of the United States in 1912 and 1913, the figures for 1913 being 148,259 tons, valued at $587,041. In the value of commercial mineral waters sold, Virginia ranks sixth among the States, producing in 1913, 2,873,288 gallons, valued at $298,473. Other mineral products include asbestos, barytes, cement, copper, feldspar, gold, gypsum, infusorial earth, mica, millstones, mineral paints, salt, sand and gravel, silver, slate, and zinc.

TRANSPORTATION. The total railway mileage operating in the State on June 30, 1914, was 7401; of this, 3497 was main track. There were about 185 miles of new track constructed during the year.

EDUCATION. The total school population in 1914 was 616,168. There were enrolled in the public schools 427,937, and the average daily attendance was 281,976. The total number of teachers was 11,336, of whom 9383 were females, and 1953 males. The average monthly salary of male teachers was $60.59, and of female teachers $44.76.

FINANCE. The report of the Auditor of Public Accounts for the fiscal year ending Sept. 30, 1914, shows a balance in the treasury on Oct. 1, 1913, of $482,823. The receipts for the year aggregated $7,797,532 and the disbursements $7,645,357, leaving a balance on Oct. 1, 1914, of $635,417. The public debt on Oct. 1, 1913, amounted to $24,339,289, a reduction of $305,785 during the year.

CHARITIES AND CORRECTIONS. The State institutions include the Virginia Penitentiary at Richmond; the State Farm at Lassiter post office; the Central State Hospital at Petersburg; the Eastern State Hospital at Williamsburg; the Southwestern State Hospital at Marion; the Western State Hospital at Staunton; the Virginia State Epileptic Colony, and Virginia Colony for Feeble-Minded at Madison Heights; Catawba Sanatorium at Catawba; the Virginia School for the Deaf and Blind at Staunton; and the Virginia School for the Colored Deaf and Blind at Newport News. There are several other institutions supported by the State, but owned and controlled by independent boards. The State Board of Charities and Corrections has control of the jails and almshouses.

POLITICS AND GOVERNMENT. The Legislature met in 1914, as the sessions are biennial, and are held in the even years. On March 11, a woman suffrage amendment was rejected by the House of Delegates. On September 22 an election was held on a measure providing for Statewide prohibition, which was adopted and goes into effect on Nov. 1, 1916. There was no election for Governor or for United States Senator in 1914. Representatives to Congress were voted for; the Democrats elected representatives in all the ten districts except one. In the ninth a Republican candidate was successful.

STATE GOVERNMENT, 1915. Governor, Henry C. Stuart; Lieutenant-Governor, J. T. Ellyson; Secretary of Commonwealth, B. O. James; First Auditor, C. Lee Moore; Treasurer, A. W. Harman, Jr.; Superintendent of Instruction, R. C. Stearnes; Attorney-General, J. Garland Pollard; Adjutant-General, W. W. Sale; Commissioner of Agriculture, George W. Koiner; Commissioner of Insurance, Joseph Button—all Democrats.

JUDICIARY. Supreme Court of Appeals: President, James Keith; Justices, S. G. Whittle, John A. Buchanan, George M. Harrison, and Richard H. Cardwell; Clerk of the Court, H. Stewart Jones—all Democrats.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Democrats	35	92	127
Independents and Republicans	5	8	13
Democratic majority	30	84	114

The representatives in Congress will be found in the article UNITED STATES, section *Congress.*

VIRGINIA, UNIVERSITY OF. A State institution of higher learning, at Charlottesville, Va., founded in 1819. The enrollment in all departments of the university in the autumn of 1914 was 906, and the faculty numbered 94. There were no notable changes in the faculty during the year, but several noteworthy benefactions were received. Among these latter was a gift of $6074 from the estate of Dr. Cumberland George Herndon, making the total to date $14,246; one of $23,373 from the estate of E. J. Folkes, to endow two scholarships; one of $41,988 from the estate of Col. James H. Skinner, to establish scholarships of the value of $250 each; and one of $40,000 from the Peabody Education Board, to erect an education building. Dr. Bennett Wood Green bequeathed to the university practically his entire estate, which will amount to about $135,000, to endow two scholarships and the library. The productive funds of the university amount to $2,089,673, and the income from all sources to $329,536. The library contains 100,000 volumes. The president is E. A. Alderman, D.C.L., LL.D.

VIRGIN ISLANDS. A group of West Indian islands; a presidency of the Leeward Islands colony (q.v.). The capital and chief town is Road Town, on Tortola; it has 410 inhabitants. Sugar and cotton are grown. The peasants also raise cattle and catch fish. Their trade is almost exclusively with the Danish islands. Total imports, 1912, £10,323 (£9570 in 1911); exports, £7258 (£8852). Tonnage entered and cleared, 13,067. Customs revenue, 1912–13, £1184. Revenue, 1012–13, £4795; expenditure, £4980. There is no debt. Commissioner, 1914, T. L. H. Garvis. See LEEWARD ISLANDS.

VISCONTI-VENOSTA, EMILIO, MARQUIS. An Italian statesman and diplomat, died Nov. 28, 1914. He was born in Milan in 1829, and when a young man became active in the conspiracies against the Austrian government, continuing these activities until in 1859 he was forced to flee to Turin. During the war with Austria in that year he was appointed by Cavour royal commissioner with the Garibaldian forces. In 1869 he was elected deputy, and later was sent to Paris and London on diplomatic missions. As reward for his successful work he was given a permanent appointment in the Foreign Office and later became Under Secretary of State. He was appointed Minister to Turkey in 1866 and almost immediately afterwards was elevated to the post of Foreign Minister, but the fall of Ricasoli deprived him of his office until 1869, when he was reappointed, holding the post until 1876, during which time he did important work. In 1894 he was appointed Italian arbiter of the Bering Sea question, and two years later again becoming Foreign Minister, his first important work was to improve the relations between France and Italy by negotiating a treaty with regard to Tunis. He resigned in May, 1898, but again accepted the portfolio in May of the following year and held it until 1901, when he ceased to hold active office. As late as 1912, however, he took part in negotiations between Austria and Italy. His foresight and diplomatic ability are among the chief reasons for the possibility of Italy holding her position in international affairs.

VITAL STATISTICS. According to a bulletin of the Census Bureau, the death rate in the registration area of the United States for 1913 was 14.1 per thousand estimated population. In 1912 it was 13.9, in 1911, 14.2. For the years from 1901 to 1905 the average was 16.2; from 1906 to 1910 it was 15.1. There is, therefore, continued improvement, the average for 1911, 1912, and 1913 being 14.06. What these figures mean in actual lives is indicated by closer analysis. The decrease from 16.2, from 1901 to 1905, to 14.1 for 1913, amounts to 13 per cent, or a reduction of one death in every eight. The largest percentage of decrease was in Rhode Island (15.7), followed by New York (12.3), New Jersey (11.2), and Massachusetts (9.6). The State with the lowest death rate is Washington, with 8.5 deaths per thousand population; and following in order come Minnesota, 10.4; Utah, 11.0; and Wisconsin and Colorado, 11.5. The highest rates were in New Hampshire, with 17.1; North Carolina, 16.8; Maryland, 16.2; Vermont, 15.8; Maine, 15.3; and Connecticut, Massachusetts, New York, and Rhode Island, 15.0. The four States which had a colored population of over 10 per cent, Kentucky, Maryland, North Carolina, and Virginia, averaged 15.0, while a group with equal population, but fewer colored, Wisconsin, Washington, Vermont, and Minnesota, averaged 11.5. Among cities of over 100,000 population, Seattle and Spokane led with only 8.4 and 8.9, respectively. Portland, Ore., followed with a rate of 9.5. The highest rates occurred in Memphis, Tenn., 20.8; Richmond, Va., 20.4; New Orleans, 19.9; Albany, N. Y., 19.8; Baltimore, 18.5; Nashville, Tenn., 17.8; Birmingham, Ala., 17.4; Atlanta, Ga., 17.4; and Washington, D. C., 17.3.

Records of the Department of Health, New York City, show that the death rate per annum of children under five years has fallen from 96.5 per 1000 in 1891, to 61.3 in 1901, 43.8 in 1911, and 37.3 in 1913. For the summer months—June, July, and August—the death rate of children under five years of age during the same period was 125.1 per 1000 in 1891, 76.2 in 1901, 46.3 in 1911, and 38.8 in 1913. This reduction was believed to be due largely to the use of pasteurized milk, but doubtless also to other hygienic and sanitary measures adopted as the result of constant agitation, legislation, and the efforts of the health authorities.

Infant Mortality. *Canada.* With a little less than one-sixth the population of New York, Montreal heads the list in Canada in infant mortality. It has three times the mortality per 1000 that New York has. Recent statistics place it at 290 per 1000 births. Brandon comes next with 269; Ottawa, 256; Halifax, 204; Hamilton, 173; Winnipeg, 169; London, 164. By provinces, the deaths per 1000 births were as follows: Manitoba, 149; Ontario, 131; Saskatchewan, 130; Nova Scotia, 111; Prince Edward Island, 104. The new western cities head the list. In June the Toronto Department of Health inaugurated a new branch of its service, known as the Division of Child Hygiene. The appointments are in the hands of the professor of pediatrics in the University of Toronto and the Medical Officer of Health. Toronto in 1914 had a population of 510,000, of which 10,960 were under one year of age, and 21,070 under two years. In 1897 the infant mortality totaled 664, when the population stood at 197,000. During the five years, 1909–13, it has been as follows: commencing with 1909—1410; 1420; 1432; 1584; 1877.

Scotland exhibits the same phenomenon of a falling birth rate as has been reported for England. The rate for 1913 was 25.5 per 1000, the lowest yet recorded, being 28 per cent less than the rate for 1876. The excess of births over deaths was 47,476, being 2903 less than in the previous year, 4487 less than the mean of the natural increases of the preceding five years, and 6199 less than the mean of those of the preceding ten years.

The following statistics as to contagious diseases throughout the world are compiled from the United States Public Health Reports. While in many instances incomplete and misleading, they are the best obtainable:

Smallpox. Algeria, 433 cases; Arabia, 26 cases, 9 deaths; Argentina, 2 deaths; Australia, 32 cases, 1 death; Austria-Hungary, 137 cases; Belgium, 9 deaths; Brazil, 4731 cases, 1205 deaths; Canada, 303 cases, 6 deaths; Canary Islands, 28 deaths; Canal Zone, 1 case; Ceylon, 189 cases, 52 deaths; Chile, 13 cases; China, 254 cases, 177 deaths; Cuba, 7 cases, 1 death; Dutch East Africa, 1 case; Dutch East Indies, 2067 cases, 442 deaths; Egypt, 771 cases, 272 deaths; France, 120 cases, 137 deaths; Germany, 25 cases, 3 deaths; Gibraltar, 7 cases, 1 death; Great Britain, 49 cases, 2 deaths; Greece, 137 deaths; Guadalupe, 10 cases, 1 death; Honduras, 6 deaths; India, 866 deaths; Indo-China, 9 cases, 4 deaths; Italy, 9 cases, 2 deaths; Japan, 102 cases, 29 deaths; Mauritius, 1 case; Mexico, 690 cases, 563 deaths; Morocco, "present"; Norway, 30 cases, 7 deaths; Peru, "epidemic"; Philippine Islands, "severe outbreak in Samar Province"; Portugal, 54 cases; Russia, 1064 cases, 358 deaths; Servia, 166 cases, 54 deaths; Siam, 4 cases, 2 deaths; Spain, 346 deaths; Straits Settlements, 16 cases, 1 death; Sweden, 13 cases; Switzerland, 217 cases, 1 death; Turkey in Asia, 1529 cases, 898 deaths; Turkey in Europe, 166 cases.

Plague. Arabia, "present"; Australia, 5 cases; Azores, 1 death; Brazil, 91 cases, 71 deaths; British East Africa, 36 cases, 21 deaths; Ceylon, 326 cases, 300 deaths; Chile, 37 cases, 25 deaths; China, 3377 cases, 1747 deaths; Cuba, 4 cases; Dutch East Indies, 14,253 cases, 12,272 deaths; Ecuador, 479 cases, 209 deaths; Egypt, 119 cases, 108 deaths; German East Africa, 15 cases, 9 deaths; Great Britain, 9 cases, 3 deaths; Greece, 22 cases, 3 deaths; Hawaii, 4 deaths; India, Jan. 4 to Oct. 17, 1914, 270,242 cases, 226,104 deaths; Indo-China, 1674 cases, 1053 deaths; Japan, 562 cases, 453 deaths; Mauritius, 56 cases, 23 deaths; Morocco, 8 cases, 2 deaths; New Caledonia, 8 cases, 2 deaths; Persia, 1 case; Peru, 521 cases; Philippine Islands, 24 cases, 23 deaths; Portugal, 8 cases, 8 deaths; Russia, 288 cases, 221 deaths; Senegal, 12 cases; Siam, 59 deaths; Tripoli, "present"; Turkey in Asia, 66 cases, 34 deaths; Straits Settlements, 4 cases, 4 deaths; South Africa, 29 cases, 1 death; Venezuela, 2 deaths; Zanzibar, 33 cases, 21 deaths.

Plague in the United States. Thirty cases in New Orleans from June to September, 1914.

Cholera. Austria-Hungary, 767 cases, 208 deaths; Ceylon, 46 cases, 20 deaths; China, 19 cases, 7 deaths; Dutch East Indies, 1545 cases, 1195 deaths; Egypt, 2 cases; Germany, 33 cases, 9 deaths; Greece, 3 cases, 1 death; India, 182,557 deaths; Indo-China, 129 cases, 63 deaths; Philippine Islands, 1332 cases, 884 deaths; Japan, 6 cases, 3 deaths; Persia, 1 case; Russia, 271 cases, 99 deaths; Servia, "present"; Siam, 289 deaths; Straits Settlements, 2033 cases, 1296 deaths; Turkey in Asia, 49 cases, 29 deaths; Turkey in Europe, 330 cases, 124 deaths.

Yellow Fever. Brazil, 85 deaths; Ecuador, 50 cases, 30 deaths; Mexico, 9 cases, 4 deaths; South Nigeria, 9 cases; Togo, 1 case; Trinidad, 2 cases; Venezuela, 6 deaths; West Indies, 1 death. See Typhoid Fever.

VOCATIONAL EDUCATION. See Education in the United States.

VODKA. See Russia.

VOELKERS, Karl. A German ophthalmologist, died at Kiel in January, 1914. He was born in 1837, became professor of ophthalmology in Kiel University in 1866, and remained in that position until shortly before his death. He published numerous books on his specialty, notably on the mechanism of accommodation.

VOLCANOES. The list of volcanic outbreaks in 1914 included only one or two notable eruptions, of which the most formidable was that of Sakura-jima, a volcano in the Bay of Kagoshima, Japan. The outburst began January 13, with an outpouring of lava and ash which continued for several days and laid waste the greater part of the island of Sakura. As most of the inhabitants were able to effect their escape to the mainland, the loss of life was comparatively small, a few hundred at most. The property damage, however, was heavy. The fall of ash covered Kagoshima, the principal city in the vicinity, and for a time threatened its destruction, but actually inflicted only slight loss. The volcano long had been moderately active, discharging steam from one of its two summit craters, but had shown no very violent manifestations since the year 1779. Slight earthquakes accompanied the eruption.

An unusual event in the United States was the display of activity shown by Lassen Peak, California, which like Shasta and other cones of that section was supposed to be extinct. There have been no evidences hitherto to indicate that the fires were merely dormant. A cloud of steam and ash began to issue from the summit on May 30, and soon led to the formation of a crater-like depression, plainly marked amid the snow-fields. Periods of activity alternated with quiescent conditions all through the summer; the heaviest discharge of steam occurred on June 8 and July 18, and on the latter date the column rose to a height of 10,000 feet above the peak. At these times it appeared not unlikely that the eruption might develop violent aspects, and such were freely described in the press, but without much basis. The outbreak may be regarded as one of a series that has taken place in the Cordilleran region since the great earthquakes of Alaska and California, of which note will be found in previous volumes of the YEAR BOOK. See also *Volcanic Emanations*, under GEOLOGY.

VOLUNTEERS, NATIONALIST. See GREAT BRITAIN, *History, passim*.

VOORHEES, WILLARD PENFIELD. An American jurist, died June 1, 1914. He was born in New Brunswick, N. J., in 1851, and graduated from Rutgers College in 1871. After studying law, he was admitted to the bar as attorney in 1874 and in 1878 he became a counselor. In 1908 he was appointed a justice of the Supreme Court of New Jersey for a term of seven years. He was a director in several financial institutions and was a trustee of Rutgers College, which conferred the degree of LL.D. upon him in 1910. Judge Voorhees was always much interested in public affairs in New Brunswick, and served in that city as a member of the Board of Water Commissioners.

VROOM, GARRET DORSET WALL. American jurist, died March 4, 1914. He was born in Trenton, N. J., in 1843, and graduated from Rutgers College in 1862. He studied law and in 1865 was admitted to the bar. From 1866 to 1870 he was city solicitor of Trenton and was prosecutor of pleas of Mercer Co. from 1870 to 1873, later serving as Mayor of Trenton from 1881 to 1884. From 1901 to 1913 he was judge of the Court of Errors and Appeals of New Jersey. He was a member of several patriotic societies, and was the editor of: *Revised Statutes of New Jersey* (1877); *General Statutes of New Jersey* (1895); and *New Jersey Law Reports* (vols. xxxvi to lxx).

WADSWORTH, JAMES WOLCOTT, JR. An American public official, elected on Nov. 3, 1914, United States Senator from New York, to succeed Elihu Root. He was born in Geneseo, N. Y., in 1877, the son of Gen. James W. Wadsworth. He graduated from Yale in 1898 and at once engaged in the management of the large farms and estates which belong to his family. In addition to these duties he took an active interest in politics, in 1905 was elected a member of the New York Assembly, serving until 1910, and from 1906 to 1910 he was speaker of the House. He was a delegate to the Republican National Convention of 1908 and 1912. Mr. Wadsworth is one of the youngest men ever elected United States Senator. Although identified throughout his career in New York politics with the more conservative element of his party, he has become well and favorably known as a fearless, high-minded, and aggressive legislator. For details of his election, see NEW YORK.

WAGES. See LABOR; LABOR LEGISLATION.

WAGNER, LOUIS. An American banker and soldier, died Jan. 15, 1914. He was born at Giessen, Germany, in 1838, and in 1849 he accompanied his family to Philadelphia, where he was educated in the public schools of that city. He learned the lithographing business, but in 1861 entered the Union army. He was promoted through various grades until he became a colonel in 1863 and brevet brigadier general in 1865. In 1862 he was badly wounded at the second battle of Bull Run. He was obliged to retire from active service and was placed in charge of Camp William Penn for the organization of colored troops, in which capacity he sent to the front over 14,000 negro soldiers. After the war he engaged in the insurance business in Philadelphia and became one of the most successful financiers of that city, taking an interest in the city government, and from 1887 to 1891 being Director of Public Works. He was an officer and director in many financial and civic organizations, in 1880–81 being commander-in-chief of the Grand Army of the Republic, and also chairman of the fiftieth anniversary of the Battle of Gettysburg Commission, created by the Legislature of Pennsylvania.

WAINWRIGHT, CHARLES S. An American physician, died May 6, 1913. He was born in Missouri in 1858, and in 1881 graduated from Bellevue College. He made a special study of the heart and lungs at European medical schools, and then went to the University Medical School in Kansas City, Mo., as professor of internal medicine. He became dean of the college, resigning in 1902 to become an instructor in internal medicine at the Post-Graduate Hospital in New York City. He resigned this post after holding it for one year, and retired from active life.

WALDEN, JOHN MORGAN. An American bishop of the Methodist Episcopal Church, died Jan. 21, 1914. He was born in Lebanon, Ohio, in 1831 and graduated from Farmers' (now Belmont) College in 1852. He taught school for several years and then conducted and published an independent paper in Illinois, afterwards being editor of a free-state paper in Kansas. In 1848 he was a member of the Kansas Constitutional Convention, and in the same year he entered the Methodist Episcopal ministry and filled pastorates in various places in Ohio and other States. He served in the Union army in 1862, and in 1864 became editor of the *Daily Advocate*. From 1862 to 1866 he was corresponding secretary of the Freedmen's Aid Commission, and from 1866 to 1868 filled the same position for the Methodist Freedmen's Aid Society. He was one of the publishing agents of the Methodist Western Book Concern from 1868 to 1884, and in the latter year was elected bishop. He was a delegate at many church conferences and made episcopal visits in every State in the Union, and to the Methodist missions in Europe, Asia, South America, and Mexico.

WARMAN, CY. American poet and writer, died April 7, 1914. He was born in Greenup, Ill., in 1855 and was educated in the common schools. For several years he engaged in farming, and was a wheat broker in Pocahontas, Ill. In 1880 he removed to Colorado and for several years was employed as railroad fireman and engineer. He then became editor of the *Western Railway* and edited several other papers in Colorado. He wrote much in prose and verse, but first achieved a national reputation as the author of the popular song "Sweet Marie." He spent several years in travel in Europe and the Orient. His published writings include: *Tales of an Engineer* (1895); *The Express Messenger* (1897); *Frontier Stories* (1898); *The Story of the Railroad* (1898); *The White Mail* (1899); *Snow on the Headlight* (1899); *Short Rails* (1900); *The Last Spike* (1906); *Weiga of Temagami* (1908); as well as verse and short stories contributed to many magazines.

WAR OF THE NATIONS, The. Although in America the tremendous armed conflict which began at the close of July has been frequently referred to as the "War in Europe" or the "European War," a less appropriate name could hardly have been invented for a war on whose battlefields in three continents fight soldiers of almost every race. The title employed at the head of this article is preferred, not only because it may be used in Europe as well as in America, but also because it suggests the very significant fact that national sentiment more especially characterizes the belligerent peoples in this than in any previous war. It is truly a War of the Nations, in which the whole fighting strength of each country goes forth to battle inspired by a passionate devotion to the "national honor" or the "national existence" of the "Fatherland" or "la Patrie."

Outline. The various aspects of the war will be discussed under the following captions:

I. The War in Brief.
II. Underlying Causes.
III. Outbreak of the War.
IV. Military Operations.
V. Naval Operations.
VI. Neutral Nations.

I. The War in Brief

By the unparalleled development of national consciousness combined with militarism and imperialism, by the diplomatic grouping of the Powers in two mutually hostile coalitions, and by the conflict of economic interests, the great nations of Europe had placed themselves in so perilous a position that a comparatively trivial occurrence was sufficient to precipitate an almost universal war. (See *Underlying Causes.*) On June 28 the Austrian heir-apparent, the Archduke Francis Ferdinand, was assassinated with his wife at Sarajevo. Accusing Servia of complicity in the Sarajevo crime, and alleging that the anti-Austrian machinations of Servian patriots menaced the Hapsburg Empire, Austria-Hungary on July 23 delivered an ultimatum containing demands with which Servia would only partially comply. Despite diplomatic remonstrances, Austria-Hungary declared war on Servia, July 28. The beginning of Russian mobilization, and the refusal of Russia to recall the mobilization order, were considered by the German government sufficient cause for declaring war on Russia, August 1. War between Germany and France was begun on August 3. Preparatory to the invasion of France, German troops had already occupied the neutral Duchy of Luxemburg, August 2, and begun to invade Belgium August 4 in spite of Belgium's resistance. The German violation of Belgian neutrality decided the British government to enter the war, August 4. Montenegro joined Servia against Austria-Hungary, August 8. As Germany refused to surrender Kiaochow, Great Britain's Oriental ally, Japan, made war on Germany, August 23. Turkey, having purchased two fugitive German warships, bombarded Russian Black Sea ports on October 29; on October 30 a state of war between Russia and Turkey was declared; and on November 5 France and Great Britain declared war on Turkey. Further formal declarations of war between the nations already engaged in hostilities completed the alignment of Servia, Russia, France, Belgium, Great Britain, Montenegro, and Japan against Germany, Austria-Hungary, and Turkey. The negotiations conducing to this result and the apologies of the various belligerents are reviewed in section III. The military operations of the war, described in section IV, may be briefly summarized as follows: (1) The Austro-Hungarian invasion of Servia, distracted by counter-invasions, and stubbornly resisted by the Servian veterans, failed in the second week of December. (2) In the Franco-Belgian theatre, the gallant Belgian defense of Liége and a French invasion of Alsace failed to stop the onward march of German armies through Belgium, Luxemburg, and Lorraine toward Paris. After the battle of the Marne, September 6–10, the German right wing fell back to the Aisne River, where a tremendous but protracted battle was fought, September 15–28. The Belgian stronghold of Antwerp succumbed to German siege-guns on October 9. At the close of the year the Franco-Belgo-British armies faced the German invaders along an intrenched battle line extending from Flanders to Alsace. (3) In the east, Russian armies invaded Austrian Galicia and German East Prussia, while German and Austro-Hungarian forces occupied a portion of Russian Poland. (4) The Turks waged war against Russia in the Black Sea region, and against Great Britain they sent an army to threaten the Suez canal. (5) The Japanese captured the German fortress of Tsingtao in China on November 6 after a siege of 65 days. (6) The German island possessions in the Pacific were easily taken by British and Japanese forces. (7) In Africa, German Togoland and Kamerun were occupied by Anglo-French troops, and German Southwest Africa invaded by British South Africans, but German East Africa repelled British attacks. In the war on the sea, discussed in section V, no decisive battle was fought as the main part of the German fleet remained in home waters, protected by mines and fortresses. The other sections are self-explanatory. The attitude of Socialists toward the war is discussed under Socialism.

II. Underlying Causes

A. Nationalism and Militarism. Surprise and indignation have often been expressed that ten nations should be involved in a terrific combat simply because an Austrian archduke and his wife were shot at Sarajevo. In reality the Sarajevo incident was not the cause, but merely the immediate occasion of the war. It is the purpose of this section to set forth a few of the facts of recent history which may show the fundamental causes underlying the war. Among the several causes of the war, first importance must be assigned to the development of national militarism, based on a sentiment of national patriotism. To the twentieth century it is a commonplace that a compact people speaking the same language and sharing the same historical traditions and social customs should be politically united as a free and independent nation. To the nineteenth century, nationalism was a revolutionary doctrine. At its commencement there was no such German nation, no such Italian nation. Goethe (1749–1832) was proud to be "a citizen of the world." But the all-conquering armies of the French Revolution brought to the disunited nations of Europe a new gospel of Fraternity, that men of the same nation should be brothers-in-arms to defend their liberties against the tyrant and their homes against the foreign foe. Poetry glorified the idea of national patriotism, religion sanctioned it, and political theory invested it with all the finality of a scientific dogma. In the course of the nineteenth century, the spirit of nationalism produced an independent Greece, a Servia, a Rumania, a Bulgaria, a Norway, an Italy, a Germany. Each nation was proud of its national language, its national customs, its frequently fictitious but always glorious national history, and, above all, of its national political unification and freedom. Not all nations were successful in achieving unity and independence. Ireland was still governed from Westminster; Poland was still divided between Hapsburg, Hohenzollern, and Romanov; Servia lacked Bosnia; Rumania longed for Transylvania (in Austria-Hungary) and Bessarabia (in Russia). According to the principle of nationalism, Austria-Hungary should have been partitioned, surrendering to Germany the German provinces of Austria, to Italy the Trentino and Trieste, to Servia Bosnia-Herzegovina, to Rumania Transylvania. Because the integrity of the Hapsburg Empire was thus menaced by nationalism, and because the Russian Orthodox Slavs favored the nationalist aspirations of the Servian Orthodox Slavs, the Austro-Hungarian government felt fear. And fear made the war.

Thus far we have considered simply the nationalist half of national militarism. Most often, during the nineteenth century, the growth of nationalist sentiment was combined with tendencies toward democracy, and foremost patriots were identical with conspicuous democrats. Such, at any rate, was the case in Hungary, in Italy, in France. Such, too, at the outset, was the case in Germany. It will be recalled that the first serious attempt to achieve the political unification of the Germanies was made by the democratically-minded Frankfort Assembly in the stormy days of 1848–49; that it represented a combination of nationalism and liberalism, of the German nation with the German democracy. But this first attempt failed. The second attempt, Bismarck's attempt "by iron and blood," was crowned with success. Bismarck's three wars of 1864, 1866, and 1870–71 solidly established the united German Empire. But they simultaneously cemented the union of nationalism and militarism, of the German nation with the Prussian army. Henceforth national patriotism was to be inseparably associated with large armies. Because the German Empire was born of the Franco-Prussian War (1870–71), the German military writer Bernhardi * could say: "'War is the father of all things.' The sages of antiquity long before Darwin recognized it. The struggle for existence is, in the life of Nature, the basis of all healthy development . . . it is not only a biological law, but a moral obligation, and, as such, an indispensable factor in civilization." According to this new pseudo-biological political theory, international politics became the "struggle for existence," in which the fit survive. Catching the spirit of the famous German historian Treitschke, General Bernhardi declared Germany the fittest to survive, for, "From their first appearance in history the Germans have proved themselves to be a civilized nation of the first rank, and, one may say, the civilized nation." "Absolutely the most important task of a modern State consists in making its armed force as powerful as possible," says Bernhardi, since war "is fought in the interest of biological, social, and moral progress." The admonition to prepare for war was taken seriously by all nations, but most seriously by Germany. On the continent of Europe monstrous standing armies and universal compulsory military service became the general rule. It is not here the place to dilate on the effect of these armies in handicapping industry, promoting immorality, and increasing taxation; nor is it here pertinent to show the influence of the military aristocracy—which was also the landed nobility ("Junkerdom")—in throttling German democracy. But it is supremely important to recognize that the maintenance of large standing armies, officered by "fire-eaters," in combination with the cynical, pseudo-scientific doctrine that the strong survive, led directly to a rivalry in armaments which inevitably produced war.

The year 1913, the year before the great war, witnessed an unprecedented outburst of national militarism. Germany put all Europe in a panic by preparing an Army Bill whose terms became known in February, 1913. To the peace footing of the German army were added 117,000 men and 19,000 officers, bringing the total strength of the peace army, including auxiliary services, up to 870,000. Immediately the Superior Council of War in France replied to the German challenge by proposing, March 4, that the term of military service be increased from 2 to 3 years, in order to augment the strength and improve the organization of the French army. It should be noted that the German increase was proposed first, that it was approved by the Bundesrat on March 28, and that it was finally passed by the Reichstag on June 30, 1913, three weeks before the French Three-Year Law was passed by the Chamber of Deputies, July 19. Russia, the ally of France, and Austria-Hungary, the ally of Germany, likewise made warlike preparations. In July the Duma authorized a new army budget and the lengthening of military service from 3 to 3¼ years; General Joffre, the French commander-in-chief, visited Russia in August, 1913, to confer on the

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* BERNHARDI, FRIEDRICH A. J. VON. Born at St. Petersburg, Nov. 22, 1849, the son of a German diplomat, received his early education in Berlin and entered the Prussian army at the age of nineteen, serving throughout the Franco-Prussian War of 1870–71. He was connected with the Military Academy 1878–77, with the General Staff of the Army 1879–81, and continuously since 1886. He became commander of the 16th army corps (1897), major-general (1900), and cavalry general (1908). Now on the retired list, he has remained a conspicuous advocate of militarism and Pan-Germanism. His book—*Germany and the Next War* (1912)—though by no means representative of the opinion of all classes in Germany, attracted much attention abroad as the work of a prominent member of that military caste which seemed to be urging Germany to war.

reorganization of the Russian army. Austria-Hungary introduced a new scheme whereby her peace army was increased from 463,000 to 560,000; and enormous sums were appropriated for the provision of artillery. Even the smaller states of the Balkan, Iberian, and Scandinavian peninsulas caught the contagion of the army fever. The most ominous feature of all this military preparation was the fear and hatred it inspired. France introduced three-year service because she feared the German army, with its corps at Metz, Saarbrücken, and Strassburg. When little Belgium introduced universal military service and planned to create a field army of 150,000 in addition to garrisons of 130,000 men, the explanation was frankly made that the recent construction of German railways leading to the Belgian frontier, without obvious economic purpose, signified that Germany was preparing to transport troops into and through Belgium in case of a Franco-German war. Similarly Germany was alarmed by the projected construction of new Russian railways, which would facilitate Russian mobilization against Germany. And in the spring of 1914 a veritable panic was created in the German and Austro-Hungarian press by articles in the Cologne *Gazette*, *Germania*, the *Post*, and the *Berliner Tageblatt*, commenting on the Russian preparations, which would be perfected a year or two hence. Bernhardi, in the *Post*, warned Germany to be ready for a war in the near future. On the other hand, the St. Petersburg (Petrograd) *Birshewija Wjedomosti* on June 13, 1914, declared that, "France and Russia do not desire war, but Russia is prepared, and hopes that France will likewise be prepared." Thus national militarism created the situation out of which grew the War of the Nations—the nations of Europe, armed to the teeth, regarding each other with insane fear, awaiting the inevitable conflict. See article on MILITARY PROGRESS in the 1913 YEAR BOOK, and sections under the various countries.

B. THE WORK OF THE DIPLOMATS. While the War of the Nations was primarily due to the prevalence of the idea that each nation must excel the other in arming for the protection of "national honor," "national existence," or "national prestige," the work of diplomats and statesmen was partly responsible for the catastrophe. Again we must go back to the birth of the German Empire (1871). At that very time when Bismarck was achieving national unification for Germany, he was outraging the national sentiments of France; for, by the Frankfort treaty of peace (May 10, 1871) at the close of the Franco-Prussian War, he not only aimed to cripple France by imposing an enormous indemnity of 5,000,000,000 francs, but he also gave France an unforgettable grievance by annexing to Germany part of the French-speaking provinces of Alsace and Lorraine. In order to prevent a French war of revenge, Bismarck sought the support of other Powers. In 1872 he cemented the so-called Three Emperors' League between Hohenzollern, Hapsburg, and Romanov. When jealousy came between Russia and Austria-Hungary, Bismarck brought Italy into a defensive Triple Alliance (1882) with Austria-Hungary and Germany. But the intimate alliance of Germany with Austria-Hungary brought trouble in its train. Bismarck himself made possible the military occupation of Bosnia and Herzegovina—two Turkish provinces inhabited by people of Serbo-Croat or Servian race—in 1878. A later German Chancellor, Von Bülow, by threat of a European war compelled Russia and Servia to allow the Austrian annexation of Bosnia-Herzegovina in 1908. And in 1912–13 Austria-Hungary almost involved Germany in a war to prevent Servia from gaining a seaport on the Adriatic. These three crises showed the solidarity of the Hapsburg and Hohenzollern Empires, but won the undying enmity of the Servians, who felt their national unification to be prevented, and their independence menaced, by Austria-Hungary. Russia, ever anxious to be the patron of her Slavic kinsmen and Orthodox co-religionists in the Balkans, and ambitious to secure her own supremacy in the Near East, became more than ever the antagonist of Austria-Hungary in the Balkans and the enemy of Austria's ally. Thus Germany incurred the enmity of Russia, Servia, and France.

So long as Bismarck, with rare diplomatic talent, prevented France from forming any alliance, the Triple Alliance could dominate the continent and the German military aristocracy could dominate the Triple Alliance. After Bismarck's retirement in 1890, however, less astute statesmen presided in Germany. France was allowed to form a Dual Alliance with Russia (1895) on the basis of mutual hostility to Germany and of Russia's need for French capital in the development of industries, railways, and armament. The second serious blow to German hegemony was the attachment of Great Britain to the Dual Alliance. That Great Britain was able to overcome her historic hatred of France, her fear of Russian ambitions in Asia, and her repugnance for Russian autocracy was due not so much to Edward VII, whose famous visit to Paris in 1904 sealed the Entente Cordiale, as to the remarkable French diplomat Théophile Delcassé,[*] who with perseverant tact strove to undo Bismarck's work [†] and with fiery patriotism worked for the aggrandizement of France. Thanks largely to Delcassé's diplomacy, the Russo-Japanese War of 1904–05, between the French ally Russia and the British ally Japan, resulted, not in a rupture of the Franco-British Entente, but in an agreement between Russia and Japan, a settlement of the various Russo-British colonial disputes, and the formation of the Triple Entente, in 1907, including Russia, Great Britain, and France.

More than to any one person, however, the formation of the Entente was due to the appearance of German militarism on the high seas—the construction of the German navy. Taking to heart the lessons of the Spanish-American and Boer Wars, and believing with Captain Mahan that sea-power was essential to a nation's greatness, Germany prepared to challenge the "mistress of the seas." In 1898 Admiral von Tirpitz began his work as Secretary of State for the Imperial German navy; Admiral von Koester's Navy League redoubled its agitation for a "big navy," and in 1900 Kaiser Wilhelm himself proclaimed that "Germany's future lay upon the water," that "the ocean was essential to

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[*] DELCASSÉ, THÉOPHILE (1852–   ), member of the Chamber of Deputies since 1889, energetic colonial minister (1892–95), foreign minister (1898–1905), minister of marine (1911), ambassador to Russia (1913), and again foreign minister (1914–   ).

[†] For the weakening of Italy's attachment to the Triple Alliance, see section VI.

Germany's greatness." Henceforward the building of German fleets went feverishly forward. Great Britain, accepting the challenge, resolved to maintain a "two-Power standard," which, as subsequently modified, signified the construction of 8 British dreadnoughts for every German 5. Impatient of this ruinous naval competition, the British government more than once offered to limit armaments or to call a halt for a year in naval construction; but Germany scorned the offer. In this connection, it should not be forgotten that Austria-Hungary and Italy, France and Russia were at the same time participating in the naval competition of the rival triple groups.

The balance of power between the rival alliances made Europe abnormally sensitive to the slightest international disturbances. Between 1905 and 1914 five times Europe was brought to the verge of a great war. In 1905 the first Moroccan crisis was caused by the abrupt declaration of the German government that since Germany had not been consulted when, in return for nonmolestation in Egypt, Great Britain had given France a free hand in Morocco, an international conference should be called to discuss the status of Morocco. So menacing was the German Chancellor's attitude, that France was compelled not only to submit her claims to a conference, but also to dismiss her able foreign minister, Delcassé, at Germany's dictation. Three years later, when Russia protested against the Austrian annexation of Bosnia-Herzegovina, the Kaiser declared himself ready to stand "in shining armor" at the side of his ally; and Russia, unwilling to fight Germany, refrained from interfering. In July, 1911, a third war scare was caused by the dramtic appearance of the German gunboat *Panther* at Agadir, ostensibly to protect German interests in Morocco. This time Great Britain's loyal support enabled France to escape lightly, with the cession of 100,000 square miles of the Congo as the price of Germany's permission to stay in Morocco. Again in 1912 Austria-Hungary threatened war if Servia should annex an Adriatic port; and Servia refrained. Within six months Austria-Hungary was making warlike preparations to expel the Montenegrins from Scutari. Russia championed Montenegro. But Montenegro had to give up Scutari, May 5, 1913, in order to avert a war between Austria-Hungary and Russia. Perhaps Austria-Hungary and Germany, having so often by a mere threat of war intimidated their rivals, expected that once more the Triple Entente would prefer yielding to fighting, and Austria-Hungary would be able to conquer Servia while Germany's "shining armor" held Russia in terror. In 1908, in 1912, and in 1913 Russia had been intimidated; in 1914 Russia mobilized. By misjudging the temper of Russia, or else with deliberate intent, the diplomats of Berlin and Vienna precipitated the War of the Nations.

C. ECONOMIC CONSIDERATIONS. Some devotees of the economic interpretation of history have rather rashly asserted that the true reason for the war was a dispute about pigs. Servia raised pigs, it was explained, and in seeking facilities for the exportation of pork came into conflict with the interests of Austria-Hungary. Although few students of history would accept so crude an hypothesis, it is generally admitted that economic considerations do frequently influence international relations. It is the business of this section to present a few suggestions which may show the trend of those economic considerations. (1) In the German apologies for the war, Great Britain is bitterly accused of envying German prosperity and of welcoming the war as an opportunity to crush German commercial and industrial competition. The strenuous efforts of British business men during the war to capture German trade are cited as proof. The British apologists reply that Great Britain entered the war only after extreme hesitation, after warning Germany not to violate Belgian neutrality; that Great Britain had not welcomed the war, far less caused it; and that the war on German trade was a result rather than the purpose of the armed conflict. (2) On the other side, Germany is accused of waging war for economic aggrandizement. In explanation, let us for the third time refer to the origin of the German Empire. Besides a sentimental yearning for national unity, two factors worked together to weld the many petty German States into a united nation. The spectacular part was played by the Prussian army, under the control of domineering, landowning aristocrats like Prince Bismarck. Equally important, if less striking, was the work of the industrial capitalists. They had built railways binding the Germanies together with bonds of steel; they had economically federated the Germanies in the Tariff League (*Zollverein*), preparing the way for political union. After the formation of the German Empire (1871), the influence of the two elements, the landed aristocracy of army officers and the business aristocracy of wealth, was manifested in the demand for a protective tariff. The former demanded a high tariff on imported foodstuffs to raise the price of their own farm-products; the latter required a tariff wall to keep foreign manufactures from entering into competition with German articles in the home market. Bismarck adopted the protective tariff policy in 1879. It is easy to see how such a policy might endanger the peace. For example, consider Russo-German relations. In 1904 Russia and Germany signed a commercial treaty whereby each country made certain reductions in its tariff duties on imports from the other country. The Russians felt that Germany had the best of the bargain. In 1914, as the date approached for the renewal or modification of the treaty, fear was expressed in the German press lest Russia's improved army would enable her to demand more favorable terms. In this fashion the desire of each nation to tax foreign imports and at the same time to obtain free admission of its own products into foreign countries, stimulated militarism and provoked warlike sentiments among the Powers. The United Kingdom, it should be observed, adhered to its free trade policy, and, with few exceptions, admitted the products of all lands on an equal footing. The British self-governing colonies, however, had adopted protection. (3) Whether it was due to the protection of the tariff wall, or to the German genius for applying natural science to industry, or to German thoroughness, or to aggressive commercial methods, the business interests prospered mightily under the ægis of the German Empire. Mills and mines multiplied wealth. Titanic ocean steamships carried German wares to the ends of the earth. By 1912, British excelled German foreign commerce by about $1,300,000,000; but German commerce had trebled itself since 1883 while British commerce had not quite doubled. The German government derived rich revenues from the customs duties on an expanding commerce, and viewed with satisfaction the prodigious increase in wealth and population (population increased from 41 to 66 millions between 1871 and 1912) which furnished men and money for an ever-growing army. And on the other hand, the industrial and landowning classes considered the army as protection and insurance for their interests. In one respect, however, the German business community was dissatisfied. The German merchant marine, although it had rapidly expanded, was still four times outweighed by British shipping. Great Britain's superiority was ascribed to her earlier economic development, to the fact that Germany had very little Atlantic sea-coast, to the superiority of the British navy. Germany, therefore, set herself to overcome these handicaps. And without imputing aggressive motives to the German government, the historian may and should affirm that certain German business men consciously hoped for the overthrow of British naval power and for the annexation of an Atlantic port by Germany. The open confession of such desires by German journalists like Maximilian Harden and by German shipping magnates like Herr Ballin, explains why the Belgians fear the loss of Antwerp and Ostend, and the British the loss of the sea. In parenthesis, it may be observed that similar desires for advantageous seaports were urging Russia on to Constantinople and to the Southern Baltic, Servia on to the Adriatic, and Austria-Hungary on to Salonika. (3) In a third respect the economic ambitions of Germany conflicted with those of other nations. In the last quarter of the nineteenth century certain groups of business men awoke to the opportunities which the vast uncivilized areas of Africa and Oceanica offered for the sale of cheap cotton goods, cheap liquors, and other manufactures, for the highly remunerative investment of money in the construction of railways, the development of mines, and the traffic in rubber, ivory, and oil. King Leopold of Belgium, one of the first to realize the opportunity, acquired control of the Congo region in the heart of Africa. France carved out a mighty colonial empire, and Great Britain added to hers. Germany, a belated arrival in the field, was permitted, even encouraged, by the British government, to acquire territories in Africa. But when Germany, becoming aggressive in world politics, and demanding an ever larger "place in the sun," challenged the French in Morocco and appeared envious of the British and French possessions, the prospect of a war for world-empire began to fill Europe with uneasy forebodings. (4) Concessions as well as colonies were contended for by German as against British and French capitalists. For example, when in 1914 Bulgaria arranged in return for a loan to concede to German capitalists valuable railway and mining privileges in Bulgaria, a rival bid was unsuccessfully made by the French. (See BULGARIA.) The financing of the Bagdad railway occasioned considerable rivalry between France and Germany, until an agreement was recently reached. In 1914 the envious cry was raised in Germany that German interests were being outstripped by the other Powers; that the English were greedily helping themselves to the oil product of Persia and striving to secure the oil fields of Latin America; that the French capitalists were securing new railway contracts in China, in Russia, in Greece. (5) Of all the economic interests inimical to peace, the most dangerous was the arms-manufacturing business. It is commonly known that in 1913 Karl Liebknecht horrified the German Reichstag by alleging that the Krupps, the world-famous makers of guns and armor, systematically stirred up hostility between France and Germany in order to obtain larger orders for arms. Every Army Bill, every dreadnought, every war, meant profits for the armament firms. The Balkan Wars were fought with weapons forged in Germany and France. As the Krupps had made the Turkish guns, the defeat of Turkey meant diminished prestige and smaller sales for Krupp wares, unless another war should reëstablish the fame of cannon "made in Germany." English firms—Armstrong & Vickers, and Witworth—were engaged to build an ordnance factory in Russia, and to construct battleships for Spain, for Brazil, for Turkey. For Krupps, as well as for their rivals, the War of the Nations was a golden opportunity. The Belgian armament manufacturers at Liége alone were unfortunate, for Liége was captured by German troops. (6) Finally, a word may be added regarding the banking interests and the war. Articles have appeared in support of the argument that the panic and consternation in financial circles at the outbreak of the war proved conclusively that "capital" did not want the war. While there is doubtless much truth in this reasoning, the fact must not be overlooked that in panics large fortunes are won as well as small fortunes lost. The huge war loans, moreover, offered unexampled opportunities for financial speculation. The statement is also made that the capitalists welcomed the war as a relief from the intolerable burden of militarism; for by means of income-, property-, and inheritance-taxes, Socialistically-inclined legislators were shifting the burden of militarism so as to bear more and more heavily on the wealthier classes.

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The causes of the War of the Nations may, then, be briefly stated as follows: (1) the development of national sentiment, which threatened to disrupt the Austro-Hungarian Empire, and of national militarism, which bred fear and hatred among the nations; (2) the brusqueness of Austro-German diplomacy, which snapped the strained relations between the Alliance and the Entente; (3) the influence of powerful economic interests which either led to international quarrels or stood to profit by the war.

III. THE OUTBREAK OF THE WAR

THE SARAJEVO ASSASSINATION. The event that precipitated the War of the Nations was the assassination, June 28, of the Archduke Francis Ferdinand, nephew of Emperor Francis Joseph, and heir to the Hapsburg throne, together with his morganatic wife, the Duchess of Hohenburg, while on the Archduke's first official visit to Sarajevo, the capital of Bosnia. Their entry into the town had been interrupted by the explosion of a bomb, thrown by a certain Cabrinovic, and, fortunately enough, warded off by the Archduke with his arm. The bomb exploded under the following automobile, wounding the Archduke's aide-de-camp, Colonel Merizzi. With admirable coolness the Archduke stopped his car and gave orders to have the colonel and other injured persons attended to; then he proceeded to the town hall, where he was welcomed by the Mayor. Afterwards the Archduke set out to inquire after the condition of the wounded colonel. As the royal car rounded the corner of Rudolph street, a Bosnian youth by the name of Gavrilo Princip fired several revolver-shots from the sidewalk, wounding the Duchess in the side and the Archduke in the neck. Both lost consciousness almost immediately and died before medical assistance could be secured. Princip and Cabrinovic were arrested and held for trial. The bodies of the unfortunate couple were conveyed to Vienna, where they lay in state in the chapel of the imperial palace on the morning of July 3 and were viewed by thousands. After Requiem Masses had been sung and funeral rites observed in the chapel, the corpses were ferried across the Danube to Arstetten on a boat lighted by torches, and were there interred. Requiem Masses were said in London and in other foreign cities for the repose of the souls of the Archduke and his wife. As the children of the murdered Archduke had been excluded from the succession by their father's oath, the new heir to the Austrian throne was the Archduke Charles Francis Joseph, eldest son of Francis Ferdinand's younger brother Otto. The news that Francis Ferdinand had fallen a victim to a Serb assassin caused a tremendous outburst of indignation, manifested by popular anti-Serb demonstrations throughout the empire. For on Francis Ferdinand many hopes had been pinned. His piety had made him a favorite with the Roman Catholics; his vigorous patriotism and his conscientious fulfillment of administrative duties promised well for the future greatness of the Dual Monarchy. Most significant of all, he was a conspicuous friend of the Slavs. He was known to favor the reorganization of the empire so as to place the Slavs on an equal footing with the Germans and the Magyars. For the very reason that he aspired to conciliate the discontented racial elements in Austria-Hungary, and thus to consolidate the Hapsburg monarchy, Francis Ferdinand was more dangerous to the Pan-Serbian cause.

PAN-SERBIANISM AND AUSTRIA-HUNGARY. What caused the fiercest indignation in Austria-Hungary was the wide-spread belief that the Sarajevo crime was a part of the Pan-Serb agitation for the incorporation of Bosnia-Herzegovina in a Greater Servia. Bosnia and Herzegovina, taken together, form a triangular block of territory, less than half the size of New York State, wedged in between Servia and Montenegro on the east and Dalmatia and Croatia (both Austro-Hungarian territories) on the west. Once the two provinces had formed part of a great Serb empire under Stefan Dushan, but for centuries since, had suffered oppression under Turkish rule until in 1878 they were occupied by Austria-Hungary, with the consent of the Powers. Having subdued the Begs, or Mohammedan nobility, and having expended about a quarter of a billion dollars for railways, roads, public works, and schools in Bosnia and Herzegovina, Austria-Hungary felt justified in annexing the two provinces in 1908. But the Pan-Serbian agitators claimed Bosnia for Servia, because the provinces had formed part of the Servian Empire for a brief period in the fourteenth century, and because the inhabitants were supposed to belong to the same race and speak the same language as the Servians. Servia, therefore, protested violently against Austria-Hungary's action in 1908, and was only with much difficulty constrained to promise good neighborly behavior (1909). In spite of its promise, the Servian government tolerated, if it did not actually foster, the development of Pan-Serbian conspiracies, whose anti-Austrian machinations were exposed at length in a *dossier* published by the Austro-Hungarian government on July 27, 1914. The *dossier* accused the *Narodna Obrana* and affiliated Serb societies of agitating for the detachment of Bosnia-Herzegovina from Austria-Hungary, instigating anti-Austrian crimes, and instructing komitadjis in shooting, bomb-throwing, mine-laying, and bridge-destroying. By terrorism and by insidious propaganda the *Narodna Obrana* aimed to gain Bosnia-Herzegovina for Greater Servia. The Austrians, however, denied the justice of the Serb claim to the provinces. Only 43 per cent of the 1,800,000 inhabitants of Bosnia-Herzegovina were Orthodox Serbs; the remainder were either Mohammedans, who hated Servia, or Roman Catholic Croats, whose language, being written in Latin characters, was unintelligible to the Orthodox Serb of Servia. Probably a majority of the inhabitants would have objected to inclusion in Servia. In Vienna, Servia was regarded as an anarchic little State, puffed up by its recent victory in the Balkan War, crazed with a passion for expansion, and dominated by a clique of assassins (the conspirators who brutally murdered King Alexander I, Queen Draga, and two score others in 1903). Servia had but recently angered Austria-Hungary by refusing to allow the internationalization of the Orient Railway, many shares of which Austria-Hungary had purchased. Servia stood in the way of Austria-Hungary's commercial communication with Salonika. The Pan-Serbians, moreover, might ultimately realize the "Great Servian Idea" of uniting in a single empire Servia, Bosnia-Herzegovina, and Montenegro; in that case Austria-Hungary would have on her southern frontier a strong nation, bitterly hostile to the Hapsburgs, blocking Austrian policies in the Balkans, and acting in sympathy with Russian Pan-Slav aspirations. Such a State would not only be a formidable barrier to prevent Austria-Hungary from advancing further on her "civilizing mission among the Southern Slavs"; it would be a positive danger to the Dual Monarchy. For Pan-Serbianism, which was nothing more than nationalism run riot, if allowed to triumph, would mean the break-up of the Austro-Hungarian State. First Bosnia and Herzegovina would be torn away by Servia; then Transylvania and other regions by Rumania; soon the Croatians would be claimed as kinsmen of the Serbs; the Ruthenes would be added to Russia; and perhaps in the end a Pan-Slav confederacy would wrest all the Slavic races from the Hapsburg Crown. Pan-Serbianism was therefore regarded, and with some justice, as a direct menace to the integrity of the Austro-Hungarian Empire.

THE ULTIMATUM TO SERVIA. The Sarajevo assassination was not the first deed of blood for which Austro-Hungary blamed Servia, but the high rank of the victims and the clear evidence that the plot had been hatched in Belgrade, gave the Vienna government reason to believe that the time had come to stamp out Pan-Serbianism once for all. Judicial investigations at Sarajevo, and the confessions of the culprits, led to the startling conclusions that the plot against Francis Ferdinand had been concerted at Belgrade by Gavrilo Princip, Nedeljko Cabrinovic, and Trifko Grabez,—all citizens of Bosnia-Herzegovina, with the assistance of the Servian State employee, Milan Ciganovic, and the Servian Major Voija Tankosic; that the six bombs and the four Browning pistols for the assassination were delivered to Princip, Cabrinovic, and Grabez, by Milan Ciganovic and Major Tankosic at Belgrade; that the bombs came from the arms depot of the Servian army at Kragujevac; that Ciganovic instructed the conspirators in the use of the bombs and the pistols; that the arms were smuggled across the Bosnian frontier by a secret system of transport under Ciganovic's direction and with the connivance of Servian frontier officials and customs officers. On the basis of this incriminating evidence, the Austro-Hungarian government at 6 P. M. on July 23 * presented an ultimatum to Servia. This extraordinary document, which has already become historic, was couched in the most peremptory terms; its spirit was that of an outraged government, exasperated beyond endurance, and determined once for all to stop Pan-Serb plotting, regardless of international law or of constitutional formalities. By failing to suppress the anti-Austrian conspiracies, Servia had violated her promise of 1909 to "live on good neighborly terms" with Austria-Hungary, the ultimatum declared; the crimes culminating in the Sarajevo tragedy had compelled the Austro-Hungarian government at last to abandon its attitude of benevolent and patient forbearance,to put an end "to the intrigues which form a perpetual menace to the tranquillity of the monarchy," and to demand effective guarantees from the Servian government. The Servian government must publish on the front page of its Official Gazette and in the Official Bulletin of the army a declaration condemning the propaganda against Austria-Hungary, regretting the participation of Servian officers and functionaries in that propaganda, and warning the population that henceforward such machinations would be vigilantly anticipated, vigorously suppressed, and rigorously punished. The Servian government was furthermore called upon (1) to suppress anti-Austrian publications; (2) to dissolve the anti-Austrian society, *Narodna Obrana*, and similar organizations, to confiscate their means of propaganda, and to prevent their reorganization under new names; (3) to eliminate anti-Austrian propagandists, and to discard anti-Austrian text-books from the Servian educational system; (4) to discharge such officers and officials as the Austro-Hungarian government should accuse of anti-Austrian propaganda; (5) "to accept the collaboration in Servia of representatives of the Austro-Hungarian government in the suppression of the subversive movement directed against the territorial integrity of the monarchy"; (6) "to take judicial proceedings against the accessories to the plot of June 28 who are on Servian territory," and to allow delegates of the Austro-Hungarian government to take part in the investigation leading thereto; (7) to arrest Major Tankosic and Milan Ciganovic, "who have been compromised by the results of the magisterial inquiry at Sarajevo"; (8) to prevent by effective measures the coöperation of Servian authorities in the illicit traffic in arms and explosives across the frontier, and to punish the officials who had assisted the perpetrators of the Sarajevo crime by facilitating their passage across the frontier; (9) "to furnish the Imperial and Royal government with explanations regarding the unjustifiable utterances of high Servian officials, both in Servia and abroad, who, notwithstanding their official position, have not hesitated since the crime of the 28th June to express themselves in interviews in terms of hostility to the Austro-Hungarian government"; (10) to signify acceptance of the Austro-Hungarian demands within 48 hours.

The Austro-Hungarian Note, communicated to the Powers on the following day (July 24), was pronounced by English, French, and Russian diplomats a most formidable document, to which Servia could hardly yield without an humiliating surrender of her sovereign rights as an independent State. The Political Director at once advised Servia to invite arbitration and to act with all caution; Sir Edward Grey urged compliance with as many points as possible; but complete acceptance by Servia of the Austro-Hungarian demands seemed to be out of the question. Whether an unsatisfactory answer would cause Austria-Hungary to declare war immediately, was not quite clear. In case Austria-Hungary should actually attack Servia, Russia would certainly come to Servia's aid with diplomatic and perhaps with military measures; for Russia felt a strong interest in preventing Austria-Hungary from destroying the independence of Servia. By strong ties of racial kinship and religion, Russia was bound to protect Servia. The German government, however, strongly maintained that no European Power had the right to interfere in Austria-Hungary's affair with Servia. The German ambassador in Paris declared that "The German government desire urgently the localization of the dispute, because every interference of another Power would, owing to the natural play of alliances, be followed by incalculable consequences." It was practically a threat that if Russia intervened, Germany would once again stand at the side of her ally "in shining armor," and a general European war would result. As Russia was embarrassed by a serious and violent strike (see RUSSIA), France by the bitter Caillaux controversy (see FRANCE), and Great Britain by the menace of an Irish civil war (see GREAT BRITAIN), and as the French President and Premier were at sea, returning from a visit to Russia, the Triple Entente would be at a serious disadvantage in offering either diplomatic or armed resistance to Germany and Austria-Hungary. The Powers of the Triple Entente urged, above all things, that Austria-Hungary should extend her time-limit, so as to allow negotiations for a possible peaceful settlement, and afford opportunity for Austria-Hungary to revise or justify her ultimatum. On July 24 the Russian minister for foreign affairs, M. Sazonov, instructed the Russian representative at Vienna to demand a prolongation of the term of the ultimatum; Great

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* Owing to a difference of thirteen days between the calendar used in Orthodox countries and the calendar used in Western Europe, the Austro-Hungarian note of July 23 was received in Servia on July 10. In this article, to avoid confusion, all dates are translated into Western time.

Britain and France decided to support the demand; Germany, however, refused to support the demand for delay, and when urged by Great Britain and Russia, the German minister, Herr von Jagow, replied that he had doubts as to the wisdom of Austria yielding at the last moment, and was inclined to think that such a step might increase the assurance of Servia. Herr von Jagow feared that the plea would have no result. The Russian chargé d'affaires at Vienna found it impossible to see the Austro-Hungarian foreign minister, Count Berchtold, in regard to the proposed time-extension, as the latter had left for Ischl (a watering place about 140 miles west of Vienna) just at this most critical moment; the proposal was communicated by wire, however, and was flatly rejected by the Austro-Hungarian government. Thus the first diplomatic move to prevent war failed.

The Servian Reply. The Servian Reply to the Austro-Hungarian Note was delivered on July 25. The Russian foreign minister, when informed of the tenor of the Servian Reply, thought it more conciliatory than could have been expected; he could "not see what further demands could be made by Austria, unless the Vienna Cabinet is seeking for a pretext for war with Servia." The Austro-Hungarian minister, however, considered the Reply unsatisfactory and immediately left Belgrade. The reasons for refusing to accept the Servian answer were set forth by the Austro-Hungarian government in a running commentary which was published in the newspapers together with the text of the Reply. The Reply declared that "the Royal government cannot be held responsible for utterances of a private character such as newspaper articles and the peaceful work of societies"; the Servian government denied having made any attempt officially "to change the political and legal conditions set up in Bosnia and Herzegovina." To Austria-Hungary this contention was absolutely inadmissible; Servia was accused, not of official attacks on the Dual Monarchy, but of failing to suppress movements directed against the territorial integrity of the monarchy in spite of the pledge of March 18, 1909, to cultivate good neighborly relations with Austria-Hungary. In reply to Austria-Hungary's more specific demands, Servia declared herself ready "to turn over to the court (Austrian), regardless of station or rank, any Servian subject concerning whose participation in the crime at Sarajevo proofs may be given." The declaration regretting and condemning anti-Austrian propaganda was slightly modified. Most of the other points of the Austro-Hungarian Note were accepted, with slight modifications which were taken by the Austro-Hungarian government as proof of Servia's insincerity. In regard to three points, however, Servia refused to comply. In the first place, Servia refused to suppress anti-Austrian publications until such action could be legalized by the enactment of a new Press Law in the next regular session of the Skupshtina and the revision of Article XXII of the Constitution. In the second place the Servian government could not agree to the coöperation of Austro-Hungarian delegates in the suppression of anti-Austrian movements in Servia, although such coöperation would be permitted "as might be in conformity with international law and criminal procedure, as well as with friendly neighborly relations." The Austro-Hungarian government observed on this point, "International law has as little to do with this question as criminal procedure. The question is purely one of national policing, to be solved by special agreement." In the third place, the coöperation of special delegates of the Austro-Hungarian government in the investigation of the Sarajevo plot, was declined by Servia as "a violation of the laws and criminal procedure." "However, in individual cases," Servia conceded, "information as to the progress of the investigation might be given the Austro-Hungarian delegates." This reply the Austro-Hungarian government regarded as a deliberate misinterpretation by Servia of the Austro-Hungarian demand for participation in the preliminary "*recherches*" or police inquiries, not in the "*enquête judiciaire*" or judicial proceedings. In conclusion, the Servian government declared that "in case the Austro-Hungarian government should not consider itself satisfied with this answer, it (the Servian government) is ready as always to accept a peaceful solution, either by referring the decision of this question to the international tribunal at The Hague or by leaving it to the great Powers who coöperated in the preparation of the explanation given by the Servian government on the 18th (31st) March, 1909."

The Declaration of War Against Servia. Austria-Hungary did not at once declare war on Servia; but the partial mobilization of the Austro-Hungarian army, the withdrawal of the Servian capital to Nish, and the mobilization of the Servian army, presaged ill for the peace of Europe. As a war between Austria-Hungary and Servia would almost certainly draw in Russia and other Powers, it became of prime importance to prevent or at least to delay the Austro-Hungarian declaration of war. With this end in view, the Russian minister of foreign affairs, M. Sazonov, interviewed the Austro-Hungarian ambassador in Petrograd, Count Szapary, and asked him to obtain the permission of his government for a private exchange of views in order to redraft certain articles of the Austro-Hungarian Note of the 23rd. Such direct conversations between Vienna and Petrograd might lead to an amicable understanding, and would surely remove the unfortunate impression created by Austria-Hungary's failure to explain her intentions frankly to Russia. While these Russian overtures were awaiting Austrian approval, a parallel effort to preserve the peace was being made by British diplomacy. Sir Edward Grey at first had proposed that Germany, France, and Italy should join with Great Britain in a mediatory attempt, in the first instance to gain an extension of time. When this was frustrated by the curt refusal of the Austro-Hungarian government, Sir Edward Grey proposed that the ambassadors of Germany, Italy, and France should meet in conference at London with the British minister of foreign affairs to discover a basis for peaceful agreement. To this suggestion, France and Italy promptly gave their assent; the German Secretary of State, unfortunately, thought it impossible to arrange such a conference, and preferred to rely on the direct exchange of views between Vienna and Petrograd. At the same time Germany refused to urge her ally to adopt a conciliatory tone in the conversations with Russia and declined to join with the three other Powers in urging Austria-Hungary "to abstain from all action which might aggravate the existing situation." The

German Chancellor insisted that the quarrel with Servia was a purely Austrian concern with which Russia had no right to meddle. The German ambassador at Paris declared that Germany desired to work for the maintenance of peace, but could not join with the Powers in pressing Austria-Hungary to accept arbitration or a conference. As the German "White Book" (*infra*) put it, "We could not call Austria in her dispute with Servia before a European tribunal." The uncompromising attitude of Austria-Hungary and Germany was the more dangerous as Russia had openly declared her intention to protect Servia. On July 27, in reply to a telegram (July 24) from the Prince Regent of Servia, the Czar urged Servia to neglect "no step which might lead to a settlement," and promised that if in spite of Russia's pacific endeavors war should break out, "your Highness may rest assured that Russia will in no case disinterest herself in the fate of Servia." On July 28 the Russian foreign minister frankly stated that the "order for mobilization against Austria would be issued on the day that Austria crossed the Servian frontier." The German ambassador at Petrograd was advised that, "Russia being thoroughly in earnest, a general war could not be averted if Servia were attacked by Austria." No less threatening was the temper of the German government. The German ambassador at Petrograd was instructed to inform the Russian government that, "Preparatory military measures by Russia will force us (Germany) to counter-measures which must consist in mobilizing the army. But mobilization means war. As we know the obligations of France towards Russia, this mobilization would be directed against both Russia and France. We cannot assume that Russia desires to unchain such a European war." Apparently official circles in Berlin believed that the Russian government was only "bluffing" and could be easily intimidated by Germany, for both the German Secretary of State and the Austro-Hungarian ambassador at Berlin expressed the opinion that Russia was neither desirous nor prepared for war. Only such a conviction—or else a deliberate intention to provoke a European conflict—could explain the action of the Austro-Hungarian government in declaring war on Servia at noon on July 28. The declaration of war, said the Austro-Hungarian foreign minister, Count Berchtold, made mediation impossible. "The Austro-Hungarian government, who had only decided, much against their will, on the energetic measures which they had taken against Servia, could no longer recede, nor enter into any discussion of the terms of the Austro-Hungarian note." Count Berchtold added "that the crisis had become so acute, and that public opinion had been incited to such a pitch, that the government, even if they wished it, could no longer consent to such a course." All this time, be it observed, while repudiating any desire to destroy the territorial integrity of Servia, Austria-Hungary had neglected to assure Russia that the sovereignty as well as the territory of Servia would be respected. The Russian government therefore concluded that Austria-Hungary intended to reduce Servia to a dependent position.

GERMANY AGAINST RUSSIA. On July 29 the Russian government decreed the mobilization against Austria-Hungary of 13 army corps in the four southwestern military districts of Kiev, Kazan, Odessa, and Moscow, since Austria-Hungary had declined direct conversations with Russia, declared war on Servia, mobilized * the greater part of her army, and—it was claimed—sent troops to the Russian frontier. On the same day, M. Sazonov informed the German ambassador that these measures were defensive and not directed against Germany. Russia was willing to carry on direct conversations with Vienna, or to accept the British proposal for a Four Power Conference, or, better still, to combine both methods. The following day, Herr von Jagow declared the Russian plan unacceptable to Austria-Hungary. France and Russia signified their willingness to accept any kind of diplomatic action which Sir Edward Grey might think most effective for the preservation of peace. Discouraged by Germany's apparent repugnance to any formal conference, Sir Edward Grey on July 29 "urged that the German Government should suggest any method by which the influence of the four Powers could be used together to prevent war between Austria and Russia. France agreed, Italy agreed. The whole idea of mediation or mediating influence was ready to be put into operation by any method that Germany could suggest, if mine was not acceptable. In fact, mediation was ready to come into operation by any method that Germany thought possible if only Germany would 'press the button' in the interests of peace." Although it was somewhat late for such action, the German government urged Austria-Hungary at last to take up Russia's once-refused offer of direct discussion between Vienna and Petrograd. On July 30 Count Berchtold, the Austro-Hungarian foreign minister, held a friendly conversation with M. Schebeko, the Russian ambassador, and promised that the Austro-Hungarian ambassador would discuss with M. Sazonov "what settlement would be compatible with the dignity and prestige for which both empires had equal concern." On the evening of July 31, the Austro-Hungarian ambassador in Petrograd announced that his government was willing to discuss with Russia the basis of the Note to Servia; at the same time the Austro-Hungarian ambassadors in Paris and London declared that their government had officially notified Russia that, if Russia would stand aside, neither the sovereignty nor the territory of Servia would be violated (denied by the Russian ambassador in Paris, August 1). In the meantime M. Sazonov had put forward as a basis for peace the following formula: "If Austria, recognizing that the Austro-Servian question has become a question of European interest, declares herself ready to eliminate from her ultimatum such points as violate the sovereign rights of Servia, Russia undertakes to stop her military preparations." But Herr von Jagow, the German foreign secretary, pronounced the Russian formula unacceptable, July 30. At the request of Great Britain, Russia made the formula even more conciliatory: "If Austria will agree to check the advance of her troops on Servian territory; if, recognizing that the dispute between Austria and Servia has become a question of European interest, she will allow the Great Powers to look into the matter and decide what satisfaction Servia could afford to the Austro-Hungarian government without impairing her rights as a

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* Austria-Hungary had not yet ordered a general mobilization, as the Russian ambassador mistakenly telegraphed his government on July 28.

Photograph by Paul Thompson, N. Y.

GENERAL ERICH VON FALKENHAYN
WHO SUCCEEDED TO THE CHIEF COMMAND

Photograph by Paul Thompson, N. Y.

GENERAL HELMUTH JOHANNES LUDWIG VON MOLTKE
CHIEF OF THE GENERAL STAFF

Photograph by Paul Thompson, N. Y.

GENERAL ALEXANDER VON KLUCK
COMMANDER IN THE CAMPAIGN AGAINST PARIS

Photograph by Paul Thompson, N. Y.

GENERAL PAUL VON HINDENBURG
COMMANDER ON THE EASTERN FRONTIER

FOUR GERMAN GENERALS

sovereign State or her independence, Russia will undertake to maintain her waiting attitude." In his eagerness to secure the help of Germany in preventing a war between the Great Powers, Sir Edward Grey went so far as to tell the German ambassador, July 31, that "if Germany could get any reasonable proposal put forward which made it clear that Germany and Austria were striving to preserve European peace," and if Russia and France unreasonably rejected such a proposal, Great Britain "would have nothing to do with the consequences," i.e., would not support France and Russia. Otherwise, if France should be involved as the ally of Russia in a war against Germany and Austria-Hungary, Great Britain would be "drawn in." The best answer that Herr von Jagow, whose government still professed to desire peace, could make, was that he would lay the suggestion before the Kaiser and the Chancellor, but could not discuss it unless Russia agreed to countermand her mobilization at Germany's demand. Germany thus refused Grey's last appeal, and attempted to fix the responsibility on Russia.

It appears then, that by the night of July 31, while Austria-Hungary was ostensibly willing to satisfy Russia by discussing the basis of the Note of July 23 with Russia, relations between Germany and Russia were being strained to the breaking point. On the following day, August 1, Germany was to declare war on Russia, not because a solution of the Servian question appeared impossible of attainment, but because Russia was mobilizing her army. On July 29, when Russia had ordered mobilization in four districts on the Austro-Hungarian frontier, the Kaiser had telegraphed the warning to the Czar that "military measures by Russia, which might be construed as a menace by Austria-Hungary, would accelerate a calamity which both of us desire to avoid." The Czar had replied, July 30, that the partial Russian mobilization had been decided five days ago (i.e., July 25) and "for reason of defense against the preparations of Austria." M. Sazonov stated, moreover, on July 30, that he had absolute proof that Germany was making military and naval preparations against Russia. On July 30, also, Jules Cambon reported the German foreign minister Von Jagow as saying that the heads of the army in Germany were insisting on German mobilization since every delay would be a loss of strength to the German army. That same day, according to French and Russian documents, a special edition of the *Lokal Anzeiger* was "accidentally issued in Berlin prematurely announcing German mobilization." The Russian government, already angered by the news that Austria-Hungary had bombarded Belgrade on July 30 and moved troops toward the Russian frontier, was still further provoked by the Austro-Hungarian proclamation of general mobilization, issued at 1 A. M., July 31, and followed suit with a decree for Russian general mobilization, July 31, in the afternoon. The same afternoon, telegrams were exchanged by the Kaiser and Czar, the former advising that "the peace of Europe can still be preserved by You if Russia decides to discontinue those military preparations which menace Germany and Austria-Hungary," the latter declaring it "technically impossible" to discontinue the mobilization necessitated by Austrian mobilization, and promising as long as negotiations continued to "undertake no provocative action." Nevertheless, at midnight on July 31, the German ambassador delivered a twelve-hour ultimatum demanding that Russia stop the process of mobilization not only against Germany, but against Austria-Hungary as well. To this peremptory summons, Russia vouchsafed no reply. Demobilization would have left Russia defenseless before the mobilized armies of Austria-Hungary and open to a swift attack from Germany. Two hours after the expiration of the time-limit, the Czar telegraphed asking the Kaiser to promise, as Russia had promised, that in spite of mobilization Germany would strive for peace. The Kaiser replied that war could be averted only by Russian compliance with the German ultimatum. German mobilization was ordered on August 1 at 5 P. M. At 7:10 P. M. the German ambassador at Petrograd presented a note declaring that since Russia had refused to demobilize, a state of war now existed between Russia and Germany.

GERMANY AGAINST FRANCE. At 7 P. M. on July 31, five hours before the German ultimatum was delivered at Petrograd, another German ultimatum was presented in France, demanding within 18 hours a declaration whether France would remain neutral in a Russo-German conflict. As France was allied with Russia, the French Premier gave a noncommittal reply at 1 P. M., August 1, and four hours later ordered the mobilization of the French army. Germany did not declare war on France, however, until 6:45 P. M., August 3. In declaring war on Russia Germany alleged that Russia had begun the conflict by moving troops into German territory on the afternoon of August 1. Similarly, in declaring war on France, the German government alleged that several French military aviators had "openly violated the neutrality of Belgium by flying over the territory of that country," that another French military aviator had attempted to destroy buildings near Wesel, another thrown bombs on the railway near Carlsruhe and Nuremburg, and others had been seen in the district of Eifel. These "wretched inventions" were strenuously denied by M. Viviani. On the other hand, the French government declared that German troops had crossed the French frontier at three different points on August 2, and that at the French village of Joncherey, ten kilometers within the frontier, a German officer, leading a patrol of mounted Jaegers, had blown out the brains of a French soldier.

INVASION OF LUXEMBURG AND BELGIUM. Two small "buffer States"—Belgium and Luxemburg—lay in the path of the German armies that were to invade France. Although France, honoring the treaty of London, 1867, had on August 1 promised to respect the neutrality of the Grand Duchy of Luxemburg, Germany sent troops early on Sunday morning, August 2, to invade Luxemburg, in order, said the German Chancellor, to assure the use of the railways which had been leased to Germany. Luxemburg protested in vain against this violation of her neutrality, and against the further arbitrary action of the German military authorities in ordering the expulsion, August 4, of the French minister accredited to Luxemburg. Indemnities were subsequently paid by Germany to Luxemburg, amounting, by the close of November, to $256,000. The invasion of Belgium was heralded by the presentation of a German ultimatum to the Belgian government at 7 P. M. on August 2. The German government asserted that it had "reliable information regarding the contemplated march of French forces on the line of the Meuse by Givet and Namur,"—information which left "no doubt as to the intention of France to proceed through Belgian territory against Germany." In self-defense, Germany felt bound to anticipate any such hostile action by sending German forces to repel the French invasion. If Belgium would maintain an attitude of "benevolent neutrality" and allow the passage of German troops (thus expressly violating the Hague Convention V, which Germany and the other Powers had signed in 1907), the possessions and independence of Belgium would be guaranteed and an indemnity paid by Germany; but if Belgium should in any way resist, Germany would treat her as an enemy, and "the decision of arms" would determine the future relations of Belgium to Germany. Twelve hours were allowed for the Belgian reply. At 7 A.M., August 3, the Belgian foreign minister handed a note to the German minister at Brussels, pointing out that France on August 1 had formally pledged herself to respect Belgian neutrality, and that the proposed German action would be a flagrant violation of international law. Belgium therefore proposed to prevent by every means in her power any violation of her neutrality. King Albert immediately appealed to the "diplomatic intervention" of Great Britain to safeguard the neutrality of Belgium. When this failed, and German forces entered Belgian territory at Gemmenich on the morning of August 4, Belgium appealed to Great Britain, France, and Russia to assist in opposing the German invasion by force of arms. On August 10 the Belgian government received a second German communication, forwarded through the Netherlands, regretting that "bloody encounters should have resulted from the Belgian government's attitude towards Germany," and urging the Belgian government to "spare Belgium the further horrors of war" by forming a compact with Germany. The invitation was indignantly declined.

Great Britain Against Germany. The violation of Belgian neutrality was the official reason for Great Britain's entry into the war against Germany. From the first days of the crisis, Sir Edward Grey, the British foreign minister, had taken a leading part in promoting projects for the peaceful settlement of the dispute between Servia and Austria-Hungary by the mediation of Great Britain, Germany, France, and Italy. M. Sazonov and M. Poincaré urgently advised him that the best way to prevent war would be to inform the German government that they would have to deal with Great Britain as well as with Russia and France if they supported Austria-Hungary by force of arms; but Sir Edward Grey refused to commit himself. On the other hand, he took great pains on July 29 to warn the German ambassador that in case of a general European war Great Britain might suddenly decide to intervene, and that the friendly tenor of British diplomacy must not mislead Germany into believing that Great Britain would in any case stand aside. That night the German Chancellor, hoping to induce Great Britain to remain neutral, offered to promise that Germany would annex no French territory, and no Belgian territory—unless Belgium aided against Germany; but with regard to the French colonies Herr von Bethmann-Hollweg could make no promises. In rejecting this suggested bargain, July 30, Sir Edward Grey reserved for Great Britain "full freedom to act as circumstances may seem to us to require." In readiness for any emergency, the British First Fleet was held concentrated at Portland. On July 31 Sir Edward Grey warned the German ambassador that Great Britain might be drawn in if France were involved. The same day, in view of the threatened German mobilization, he asked whether France and Germany intended to respect Belgian neutrality in event of war. France replied in the affirmative, July 31, but Germany was "not in a position to reply." Sir Edward Grey thereupon warned Germany that the violation of Belgian neutrality would probably excite public opinion in Great Britain to such an extent that Great Britain would intervene. He would not, however, promise to remain neutral even if Germany should agree to respect Belgian neutrality, or if Germany should promise to leave the territory and colonies of France intact. On the following day, August 3, Sir Edward Grey made a lengthy speech in the Commons, explaining that while Great Britain was under no treaty obligations to assist France, he had assured the French ambassador on August 2 that the British fleet would prevent the German fleet from attacking French coasts or shipping. He went on to explain that as a guarantor of Belgian neutrality and independence Great Britain was vitally concerned in preventing the conquest of Belgium by Germany. The following day, August 4, when news was received that Germany had violated Belgian territory at Gemmenich, Sir Edward Grey dispatched an ultimatum to Germany, requiring an answer by midnight, that Germany would respect the neutrality of Belgium. Germany refused, on the ground of military necessity. With evidence of anger and disappointment, the German Chancellor rebuked Great Britain for making war just for "a scrap of paper." An excited mob threw stones through the window of the British Embassy in Berlin. The next day, Mr. Asquith announced that a state of war had existed between Germany and Great Britain since 11 P. M., August 4.

Declarations of War. For convenient reference the various declarations of war are here listed: Austria-Hungary against Servia, July 28; Germany against Russia, August 1, 7:10 P. M.; Germany against France, August 3, 6:45 P. M.; German invasion of Belgium, the morning of August 4; Great Britain on Germany, August 4, 11 P. M.; Austria-Hungary on Russia, August 6; Montenegro on Austria-Hungary, August 8; Servia on Germany, August 9; France on Austria-Hungary, August 10; Great Britain on Austria-Hungary, August 12; Montenegro on Germany, August 12; Japan on Germany, August 23; Austria-Hungary on Japan, August 25; Austria-Hungary on Belgium, August 28; Turkish hostilities against Russia, October 29; Russian, French, and British ambassadors to Turkey ask for passports, October 30.

The "White Paper" and the British Case. Soon after the outbreak of war, the British government issued a collection of diplomatic documents and dispatches in a "White Paper" entitled *Miscellaneous No. 6: Correspondence Respecting the European Crisis*. The "British White Paper," as it was commonly called, served as a storehouse of materials for controversialists who quoted diplomatic notes to prove that the

British cause was just. Germany, France, Russia, and Belgium issued similar compilations. It is largely from these sources that the foregoing account has been compiled. These official publications, and the grounds upon which each nation attempted to justify its participation in the war, can be only briefly discussed here. Great Britain went to war with Germany for three reasons, according to Mr. Asquith, the prime minister,—"In the first place, to vindicate the sanctity of treaty obligations and of what is properly called the public law of Europe; in the second place, to assert and to enforce the independence of free States, relatively small and weak, against encroachment and violence by the strong; and in the third place, to withstand, as we believe in the best interests not only of our own Empire, but of civilization at large, the arrogant claim of a single Power to dominate the development of the destinies of Europe" (Edinburgh Speech, September 18). To these reasons are sometimes added the desire to defend democratic government against autocracy, to stamp out German militarism, and to maintain British naval supremacy. The adverse criticism of Great Britain may be summarized under four heads. (1) In the first place, it is argued, Sir Edward Grey by frankly threatening war at the outset might have induced Germany and Austria-Hungary to accept mediation. But he had neither the authority, nor the certainty of success, to warrant such action. (2) Secondly, Dr. Bernhard Dernburg, in a review of the White Paper, alleges that the protection of Belgium was only a shallow pretext cleverly assigned by Sir Edward Grey as an excuse for attacking Germany. Grey had refused to remain neutral even if Germany would promise not to violate Belgian territory; he had made a naval agreement with France virtually committing Great Britain to war, without any reference to the Belgian question. Furthermore, the Germans argued, Great Britain's concern for "small nations," "treaty obligations," and "neutrality," was insincere: Great Britain had shown no concern for the fate of Servia; she had ruthlessly destroyed the Boer Republic in South Africa; more than once she had violated treaties; and she had shown her disregard for the rights of neutrals by sending British troops through Portuguese colonial territory in the Boer War, and by permitting her ally, Japan, to land troops on the neutral territory of protesting China. (3) Thirdly, the Germans most bitterly accuse Great Britain of welcoming, and even instigating, the war which would enable her to crush German commercial and industrial competition. (4) Finally, when rebuked for their own militarism, the Germans retaliate by taxing Great Britain with "navalism."

The German "White Book." In order to prove that Germany had been foully attacked by Russia, the German government published a "White Book" giving the German version of the outbreak of the war but not even pretending to contain the complete diplomatic correspondence. With amazing frankness the German government in its White Book admits that in order to preserve the power and prestige of her ally, Germany "permitted Austria a completely free hand in her action towards Servia." With equal candor, the German government confesses that it refused mediation in the Austro-Servian conflict, as that would have constituted "an infraction of (Austria-Hungary's) sovereignty." After reading the British documents it is somewhat disconcerting to learn that Germany "labored incessantly" for peace, "shoulder to shoulder with England," by supporting pacific proposals in Vienna. Telegrams between the Czar and the Kaiser, and reports of Russian military preparations, are inserted in the White Book to prove that Russia's mobilization caused the war. Without offering the slightest substantiation of its statement, without even specifying the locality, the German White Book asserts that in the afternoon of August 1 "Russian troops crossed our frontier and marched into German territory. Thus Russia began the war on us." Nor is any proof offered that "On the morning of the next day France opened hostilities."

A second German White Book, *How the Franco-German Conflict Could Have Been Avoided*, reproduces telegrams sent to and from King George, July 30-August 1. The first four telegrams are interesting chiefly because the three greatest monarchs of Europe appear as "Willy," "Georgie," and "Nicky." The fifth and following dispatches show that Germany would have been ready to delay her invasion of France until the night of August 3, on condition that Great Britain would guarantee, by force if necessary, the absolute neutrality of France. Great Britain refused. The Kaiser's telegram of August 1 is especially interesting as it shows that "on technical grounds" German mobilization, once proclaimed, could not be suddenly countermanded, but had to be completed; yet it was because Russia refused to countermand her partially-completed mobilization that Germany declared war on Russia.

The Russian "Orange Book." The "Orange Book" published by the Russian government contains 79 diplomatic documents, harmonizing in general with the "British White Paper." No. 47, however, dated July 28, and briefly announcing that "the order for general mobilization (in Austria-Hungary) has been signed," is hardly consistent with the note published in the French "Yellow Book" (No. 115) declaring that general mobilization was proclaimed by Austria-Hungary at 1 A. M., July 31. It is also significant that the "Orange Book" contains no communication addressed to Belgrade from Petrograd before July 27, when the Czar replied to the Prince Regent's telegram of July 24. Hence it may be inferred that Russia refrained from advising Servia how to answer the ultimatum of July 23, or else that the "Orange Book" is incomplete. In the allegation that news of German mobilization was "accidentally" published on July 30 two days too soon, the "Orange Book" is confirmed by the French "Yellow Book."

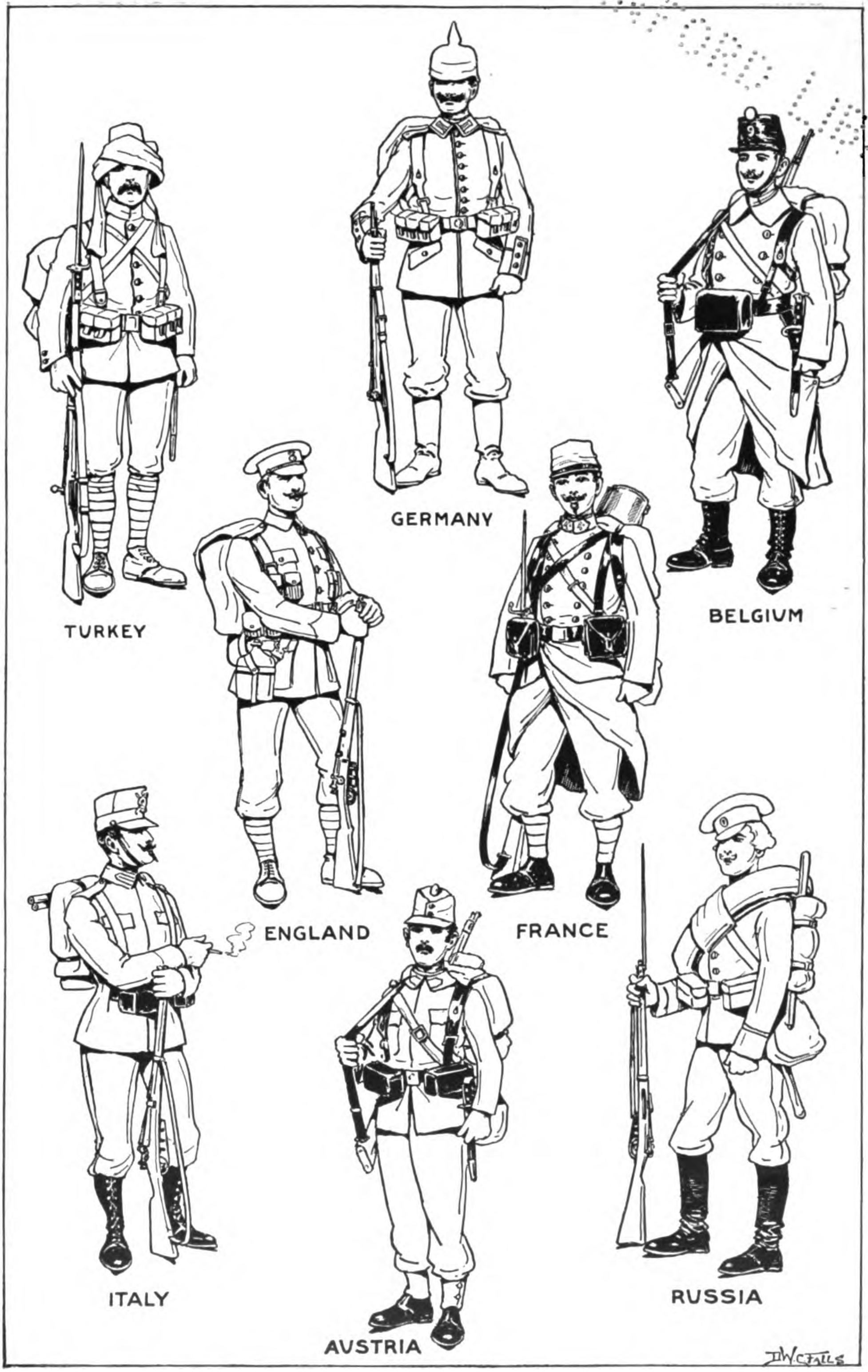
The French "Yellow Book." In many respects the most notable collection of documents was issued by the French government. In addition to an impressive array of documents showing how the pacific efforts of the Allies were frustrated by Germany's abrupt ultimatums, the French "Yellow Book" contains reports analyzing the warlike spirit in Germany in 1913. An "official secret report" received from "a reliable source" by M. Etienne in 1913, purports to present the conviction of some high German official that the German people must be prepared to look on an offensive war as a necessity. "We must so manage matters," says the official, "that under the heavy weight of powerful armaments, considerable sacrifices, and strained political relations, an outbreak should be considered as a relief." In No. 3, dated "Berlin, May 6, 1913," the French ambassador represents General von Moltke as saying that "Germany cannot and ought not to leave Russia time to mobilize. . . . We must anticipate our principal adversary as soon as there are nine chances to one of going to war, and begin it without delay in order ruthlessly to crush all resistance." Equally interesting is the report prepared for M. Pichon on public opinion in Germany according to reports of diplomatic and consular agents. The Conservative country squires, says the writer of No. 5, would welcome war as an escape from death duties and from Socialism; the higher bourgeoisie, represented by the National Liberal Party, "the party of contented spirits," hates France as the home of revolutionary ideas; "the manufacturers of guns and armor plate, the big merchants who demand bigger markets, bankers who are speculating on the coming of the golden age and the next war indemnity—all these regard war as good business"; officials of all kinds are inspired by "Bismarckian" arrogance; professors of economics demonstrate by statistics Germany's need for a colonial and commercial empire commensurate with her industrial output; historians, philosophers, and pamphleteers glorify German "Kultur"; disappointed diplomats regard France with rancor; and the forces making for peace are weak and unorganized. Another interesting document is the report of the French ambassador at Vienna, July 15, 1914, quoting the *Militarische Rundschau* to the effect that since war with Russia would surely come in the next few years, it should be provoked at once, while circumstances favored Austria-Hungary and Germany. No. 75 is a long memorandum prepared by the Austro-Hungarian government, setting forth in full detail the malignant machinations of Pan-Serbianism. No. 115, if authentic, proves that general mobilization was ordered by Austria-Hungary before it was decreed by Russia. Documents 106 and 136, reenforced by the Premier's speech (No. 159), would tend to show that German military preparations against France were well under way before mobilization was officially declared, that in order to prevent unpleasant "incidents, the French troops were forbidden to approach within 10 kilometers of the frontier," and that German troops committed more serious hostile acts on French territory than those alleged by Germany as cause for declaring war against France. No. 155 is an account of the insults and indignities suffered by M. Jules Cambon, the French ambassador at Berlin, in returning to France after the declaration of war.

THE CASE OF BELGIUM. The impression prevailing in the United States that Belgium had been unjustifiably and ruthlessly attacked by Germany was confirmed by the Belgian government's "Gray Paper" containing the diplomatic correspondence from July 24 to August 29. A Belgian Commission to the United States published a pamphlet entitled *The Case of Belgium*, in which Germany was reproached with invading and covering "with blood and ruin a small, peaceful country, of hardworking and honest people, a country which it had promised to protect." By the treaty of 1839 the King of Prussia had joined with the governments of Great Britain, France, Austria-Hungary, Russia, and Holland, in guaranteeing that Belgium should form "an independent and perpetually neutral State." The Hague Convention of 1907 on the Rights and Duties of Neutral Powers had clearly stated that: "The territory of neutral powers is inviolable. . . . Belligerents are forbidden to allow troops or trains of ammunition or provisions to pass through the territory of the neutral power. . . . It shall not be considered a hostile power if it takes measures, even forcible, to prevent violations of its neutrality." Germany was pledged to this Hague Convention as well as to the treaty of 1839. By attacking Belgium, Germany violated both pledges. The German Chancellor himself confessed the wrong in his speech before the Reichstag on August 4,—"We are now in a state of necessity, and necessity knows no law. Our troops have occupied Luxemburg and perhaps are already on Belgian soil. [They were.] Gentlemen, that is contrary to the dictates of international law. . . . We knew, however, that France stood ready for invasion. France could wait but we could not. . . . So we were compelled to override the just protest of the Luxemburg and Belgian governments. The *wrong*—I speak frankly—that we are committing we will endeavor to make good as soon as our military goal has been reached." Again, in an excited conversation with the British ambassador, Herr von Bethmann-Hollweg referred to the treaty of 1839 as "a scrap of paper." The phrase has already become classic as an indication of Germany's willingness to sacrifice treaty obligations to military expediency. Discovering that shameless treaty-breaking was condemned by an overwhelming public opinion, the German and German-American apologists dropped the plea of "military necessity" for the invasion of Belgium, and asserted that Belgian neutrality had not been violated by Germany, but rather by the alleged flight of French military aviators over Belgium, the alleged presence of French officers and British stores in Belgium, and other incidents. These accusations, however, were not supported by well-attested proof, nor were they the cause for Germany's attack. Germany made war on Belgium because Belgium refused to allow German troops to march through her territory. Yet another apology was advanced by the Imperial Chancellor in his Reichstag speech of December 2, and by Dr. Bernard Dernburg in the pamphlet *The Case of Belgium*. On the basis of documents which the Germans claimed they discovered in the office of the Belgian General Staff at Brussels, Belgium was accused of "surrendering her neutrality to England." The documents, if genuine, proved nothing more, however, than that Belgian military authorities had discussed with British military attachés, in 1906 and in 1912, what joint military action should be taken in the hypothetical case that Germany, proving unfaithful to her treaty obligations, should violate Belgian neutrality. There was no agreement that British troops should land in Belgium before Germany had invaded Belgium. It is therefore difficult for a neutral mind to understand in what respect such conversations could constitute an infraction of Belgian neutrality.

IV. MILITARY OPERATIONS

GENERAL STRATEGY AND RESOURCES. The War of the Nations originated as a struggle on

INFANTRY



TYPICAL INFANTRYMEN OF EUROPEAN ARMIES

the part of Austria-Hungary and Germany against the "Slavic Peril"—against the huge Slav empire of Russia and the small Slav kingdoms of Servia and Montenegro. But from the very beginning of the conflict, defense against Russia was of minor interest as compared with the attack on Belgium, Britain, and France. The reason was quite simple. The German General Staff * had planned, so said the military experts, that the bulk of the German army should be hurled first against France, and then, having crushed France, be transferred to the east to turn back the tide of Russia's slow-mobilizing multitudes. For Russia, with all her 171 millions of inhabitants in Europe and in Asia, was spread over so vast an area and was so deficient in railways that 10 of her 36 army corps (an army corps may be counted as 50,000 men) could not be expected to arrive on the scene in the first month, and the remaining 26 could not begin a serious attack within the first few weeks of the war. Germany could leave 5 of her 25 army corps to coöperate with 12 Austrian corps in holding back the Russian advance guard, while 2 Austrian corps "punished" Servia, and the remaining 2 Austrian and 19 German corps crushed France. The German armies in the west would sweep across Belgium—with its network of convenient railways and smooth highways—turning the flank of the strong line of French fortifications along the Franco-German frontier, and swoop down upon Paris with irresistible might. The French army annihilated, the German troops could be shifted from the west to the east (it is only a little more than 500 miles from Belgium to Russia, that is, twice the distance from Albany to Buffalo) and reserves could be brought up to defeat the advancing Russians. The attack on France and Belgium, however, met with such fierce resistance that although 13 reserve corps were sent into France on the heels of 21 active corps, in August, followed by 4 substitute reserve corps at the end of August, 8 Landwehr corps in September, and 5 semi-corps of reserves in October, in addition to 10 cavalry divisions, the German forces in France and Belgium had to fall back after their first swift stroke and could then do little more than hold a long intrenched battle line against the enemy. This delay in the west gave the dreaded "Russian hordes" time to mass in Poland for an invasion of Austria-Hungary and Germany. The Austro-Hungarian armies, moreover, began to show alarming weakness, and were unable either to conquer the Serbs in the south or to hold back the Russians in the north of the Hapsburg Empire. Germany was now compelled to fight the war on two fronts, shifting her troops back and forth as occasion required, and finding her magnificent strategic railways of incalculable value. Skillful distribution of forces, able generalship, and superior equipment enabled the Germans, with Austrian assistance, to hold back the Russian invaders, and even to take up an advanced position in Russian Poland. After five months of the war, Germany was certainly holding her own. Most of Belgium, Northeastern France, and part of Russian Poland were occupied by German troops, whereas only a small corner of Alsace and a bit of East Prussia had been lost to French or Russians. The prospect of ultimate victory for the German arms was, however, becoming rather uncertain. To be sure, the danger of a Russian "tidal wave" sweeping over Germany from the east was no longer feared; but in a long war, where endurance rather than speed of mobilization wins the victory, Germany would labor under great difficulties. Germany, with a total population of 65,000,000, Austria-Hungary with less than 50,000,000, and, later, Turkey with about 21,000,000, aggregating 136,000,000, were confronted by a coalition representing 252,000,000 of Europeans, not to speak of Russia's 20,000,000 in Siberia and the vast transmaritime empires of Great Britain and France. According to the best information obtainable, Germany had placed between 4 and 5 million men in the field by the end of the year, that is, for every 16 Germans—men, women, and children—there was 1 soldier. Germany still had second-rate fighting men and freshly maturing youths to call upon, but obviously the number was limited. France likewise was limited; an army of 5,000,000 would be one-eighth the population. But Russia boasted, in addition to 5,000,000 trained warriors, a reserve of population which could furnish 5,000,000 more (counting 1 soldier to every 16 inhabitants) if they could be mustered, trained, and equipped. Great Britain, with a population of over 45,000,000 to draw upon, was already drilling 1,000,000 or more recruits to take part in the battles of France. From the 15,000,000 white inhabitants of Canada, Australia, New Zealand, and South Africa, 100,000 or more soldiers might be sent to the battlefields of western Europe. The contingents of "native" soldiers brought from Africa by Great Britain and France, and the British Indians, were picturesque, but hardly numerous enough to exert an appreciable influence on the final issue. In short, the allies appeared to possess superior resources of men and munitions for the conduct of a protracted war. If joined by Italy, or by one of the Balkan States, the Allies would enjoy a still more marked advantage. Or again, if Austria-Hungary should be rent by internal dissensions, Germany would be left to fight against overwhelming odds. On the other hand, one of the Allies might conceivably refuse to make further sacrifices, and either make peace or carry on the war in a half-hearted fashion. Or German generalship might win a brilliant victory and destroy part of the Allied army. Into any forecast of the war's outcome, these and similar considerations were bound to inject a considerable amount of uncertainty. The possibility that the Allies would capitulate separately, however, appeared very slight indeed after the agreement signed in London, September 5, by Russia, France, and Great Britain, binding themselves not to make terms with Germany until they could do so jointly.

MOBILIZATION. Before military operations on a large scale could be inaugurated in any theatre of the war, the millions of men composing the

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* At the outbreak of the war, the Chief of the German General Staff was HELMUTH VON MOLTKE, who was born in Mecklenburg-Schwerin in 1848, served in the Franco-Prussian War of 1870–71, was attached to the General Staff as an adjutant under his famous uncle, Field Marshal von Moltke, and was appointed Chief of the General Staff and general of infantry in 1906. During the course of the War of the Nations, he was superseded in chief command of the German forces by GENERAL ERICH VON FALKENHAYN, who was born at Burg Belchau in 1861, served in China several years, acted as chief of staff of the 16th, and later of the 4th, army corps, and was appointed minister of war in 1913.

"citizen armies" of the various belligerents had to be equipped for war and sent to the front, or "mobilized." In time of peace each nation had troops scattered in towns and camps all over the country. Take Germany for example. Germany's standing or "peace army" was composed of about 830,000 men (not including 30,000 or more civilian employees), organized in 25 army corps. On a peace footing, an army corps numbered between 30,000 and 35,000 men. For war the army corps was raised to a strength of about 50,000 men by the inclusion of "active reserves," i.e., men who had recently served and were still under 28 years of age. This gave Germany a field army of over 1,250,000 trained men. In the second place, the Landwehr or second line, consisting of trained men between 28 and 39 years of age, was called up to reenforce the first line, or to do garrison duty. The German Landwehr numbered about 1,200,000 men. The third line or Landsturm included 400,000 men of middle age, who would be called upon only for defense against foreign invasion. In addition, Germany had almost 500,000 able-bodied men of military age who had been excused from regular military service and could be used in case of war to replace the wounded and killed. War, therefore, meant possible military service for some member of almost every family. The word of mobilization, flashed by telegraph to every corner of the German Empire on August 1, brought the active reserves immediately to the appointed mobilizing centre of each army corps. Some German corps were mobilized near the frontier, for example, the XV at Strassburg, the XVI at Metz, the XXI at Saarburg, the VIII at Coblenz. Others had to be transported by rail from the interior. The immensity of this movement may be faintly realized when one considers that an army corps requires between 25 and 30 50-car railroad trains for its transportation. Guns, rations, ammunition, artillery, hospital supplies, and horses went with the troops. In many cases the horses had to be purchased from farmers at the beginning of mobilization, and motor trucks from merchants. The whole railway system was operated by military authorities, on a special time schedule carefully calculated to bring the troops to the front in the shortest possible time. The huge national army was a perfect mechanism, whose delicate adjustments might be thrown into fatal confusion by the blunder of one stupid official, the delay of one special train. Travelers who witnessed the German armies concentrating on the French frontier affirm that the marvelous German mobilization progressed with the precision of clockwork. In France, in Austria-Hungary, and in Russia, mobilization was slower and less perfect in its appointments. But most reports confirm the impression that both the French and Russian armies were put in the field with greater celerity and with far less confusion than could have been expected.

Equipment of the Armies. No less perfect than the organization of the enormous armies was the equipment with which they fought. The War of the Nations was a battle of machines, waged with the help of every deadly device science could invent. The feature of the conflict in the Franco-Belgian theatre was the new Krupp 11-inch howitzer. (A "gun" throws its projectile in almost a straight line; a "howitzer" discharges its shell at an angle of elevation varying from 15 to 45; a "mortar" is fired at a still greater angle of elevation, the object being to drop a shell on the top of a fortification or behind the earthworks of the enemy.) The new Krupp howitzer, weighing nearly 40 tons, was hauled by powerful motors on two heavy motor trucks whose "caterpillar" wheels were shod with great flapping feet so as not to sink in soft ground. Arriving at the scene of action, the two trucks were backed up together and the howitzer was ready to throw an 11-inch shell at any object within a radius of six miles. The heaviest portable French siege piece had been the 10.7-inch howitzer, drawn in four parts, and difficult to move, assemble, and mount. Still more formidable than the Krupp "11" was the Austrian 12-inch howitzer, built at the Skoda works. But the surpassing achievement of the Krupp gun factory at Essen was the production of a 16-inch (42-centimeter) siege piece which could be transported by rail and readily emplaced on a concrete foundation. From this gun, discharged by electricity, a shell one meter in length, weighing almost a ton, and filled with high explosive, could be hurled some 15 miles. Skilled mechanics from the Essen works accompanied each of the 7 or 8 of these 16-inch pieces which Germany was said to have put in the field. Two of these gigantic howitzers, stationed 10 miles from the inner forts of Antwerp, rendered the elaborate defenses of that city worthless. Even the smaller German howitzers were capable of demolishing the forts at Liége and Namur and wrecking the steel-domed cupolas which had been the pride of Belgium's forts. In the field, much smaller guns were ordinarily used. The German army employed a 3-inch gun capable of throwing 20 15-pound shells per minute at an enemy three miles away. The shell was timed to explode just before striking, and would scatter 250 steel bullets in the ranks of the enemy. Gun and carriage together weighed about a ton. Aëroplanes, whose value in warfare had long been discussed, now rendered priceless service in locating the enemy, so that the artillery officers could instruct their gunners at what angle to fire at the unseen enemy. The French field gun was of slightly smaller bore than the German, but of greater power and weight. Machine guns or mitrailleuses were also used with telling effect. A machine gun is light enough to be packed on the back of a horse or drawn on a light carriage by a pair of dogs (as in the Belgian army); it fires from 400 to 500 ordinary rifle bullets per minute. The regular arm of the infantry was the rifle, tipped with the bayonet for hand-to-hand encounters. England used the excellent Lee-Enfield rifle, France the Lebel, Russia the Nagant, Belgium the Mauser, Germany the Mauser, and Austria the Mannlicher; of these various makes, the German Mauser possessed the greatest muzzle velocity, although the French had a longer effective range. Almost as important as artillery or fire-arms was the automobile. Motor cars encased in steel and armed with rapid-fire guns accompanied Von Kluck's cavalry on its swift advance. Speedy automobiles and motorcycles were invaluable for reconnoissance and communication where telephone, wireless telegraph, or aëroplane was not available. Monster searchlights mounted on motor cars illumined the field of battle by night.

The greatest service of the motor, however, was behind the firing lines. An army cannot fight unless it is fed. To feed the millions of fighting men, many thousands of motor trucks were ceaselessly employed in conveying incalculable quantities of foodstuffs. Finally, some of the most brilliant successes of the Germans were won by hurrying troops in motor trucks to the most effective point on the battle line.

Attack on France. The whole French plan of defense was based on the assumption that the neutrality of Belgium and Luxemburg would be respected. To realize the importance of the neutrality of these two States, one needs only to observe that with Belgium and Luxemburg neutral, approximately half of the northwestern frontier of France was immune from attack. The southeastern half of that frontier, from Luxemburg to Switzerland, was well defended by the Vosges mountains and by the wonderful line of French fortifications from Verdun through Toul and Epinal to Belfort. French mobilization, moreover, was directed so as to place the main strength of the French army in the trenches and forts along the Franco-German frontier proper, if not actually to take the offensive in this region. If the Germans endeavored to strike into France from Lorraine, they would encounter the bulk of the French army intrenched along a strong line of defense. As events proved, the German General Staff had determined to deliver its chief attack not from Lorraine, but from Belgium and Luxemburg. By adopting this course, Germany brought 150,000 Belgians into the field as enemies and three British army corps; but the advantages gained were considered more important than the addition of 300,000 soldiers to the enemies' ranks. In the first place, through Belgium and Luxemburg, German armies would have two natural routes leading into the heart of France. The northern route, leading from the German military base of Cologne through Liége, Namur, and Maubeuge, was that of the main railway between Berlin and Paris. The network of roads and railways in Belgium and Northern France would facilitate the transportation of troops and supplies through this region, and the comparatively level country would permit the use of the famous Krupp howitzers. The second route followed the Moselle Valley from the German base of Coblenz on the Rhine up to Luxemburg and crossing Luxemburg entered France at Longwy, and passed north of Verdun. In the second place, France had not erected such formidable fortresses along the frontier opposite Belgium and Luxemburg as those opposite Lorraine and Alsace. Dunkirk, Lille, and Maubeuge could not compare with Verdun, Toul, Epinal, and Belfort. In the third place, and perhaps this was the most important consideration, a swift incursion of German armies by way of Belgium and Luxemburg would force the French army to change the front of its mobilization from the Lorraine frontier to the Belgian frontier; and in attempting to re-form its lines, the French army might conceivably be thrown into such confusion and disorder that a gigantic victory—a Sedan on a larger scale—might be won by the Germans. This was the supreme purpose of German strategy, to demoralize and break up the French field army. Paris could be taken later. Finally, the use of the Belgian and Luxemburg routes would enable the German General Staff to put its entire effective forces immediately in the field, and use them in decisive flanking movements rather than in protracted frontal attacks. The 19 army corps which Germany had immediately available for the invasion of France were grouped in eight great armies; three were detailed to cut a broad swath through Belgium, past Maubeuge, and down the Oise; two were sent through Luxemburg and Belgian Luxemburg; and two were stationed in Alsace-Lorraine. A temporary coalition of three army corps under General von Emmich * was formed for the special purpose of seizing Liége. The eight main armies were: (1) General von Kluck's † army north of the Meuse, (2) General von Bülow's army south of the Meuse, (3) General von Hausen's army directed towards Givet, (4) the Duke of Württemberg's army just north of Luxemburg, (5) the Prussian Crown Prince's army in Luxemburg, (6) the Bavarian Crown Prince's army based on Metz, (7) General von Heeringen's ‡ army based on Strassburg, (8) and General von Deimling's army in upper Alsace.

With the troops that are always stationed near the frontier, Germany was ready to make the preliminary moves in her attack on France before the main armies were under way. Even before the declaration of war, an advance guard of the Crown Prince's army took possession of the Grand Duchy of Luxemburg, August 2, and German troops were moved by the Luxemburg railways to the French frontier at Longwy. On August 2, also, a German column crossed the French border further south, at Cirey. On the following day war was declared, several raids across the frontier were reported, and a German aviator dropped bombs on Lunéville.

Conquest of Belgium. Liége and Brussels. The attack on Belgium was begun August 4, when Gen. Otto von Emmich's three army corps moved against Liége, an important city of 174,000 inhabitants, situated just across the border from the German town of Aix-la-Chapelle, strongly fortified, and lying directly in the path of the German advance from Cologne up the valley of the Meuse. So anxious were the German military authorities that Liége should be taken without loss of time, that General von Emmich recklessly sacrificed his men in futile attempts to carry Liége by assault. Compact masses of German soldiery were hurled against the Belgian forts, only to be mowed down by murderous artillery fire, or annihilated by the explosion of mines. Assault failing, General von Emmich brought up siege guns, which speedily demolished 2 of the 12 forts which encircled the city, and enabled the Germans to enter the town on the night of August 7. Some of the surrounding forts still held out—the French assert, until August 15; but they could do no more than inconvenience the passage of German troops through Liége into Central Belgium. General Leman and the gallant Belgian garrison had by their four days' resistance held back the German military machine and had given

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* Otto von Emmich, born 1848; enlisted in 55th Infantry, 1866; general of infantry and commander of the 10th army corps, 1909.

† Gen. Alexander von Kluck, born at Münster, 1846; enlisted 1865; served in the Seven Weeks' War, 1866; twice wounded in the Franco-Prussian War, 1870–71; general of infantry, 1906.

‡ Gen. Josias von Heeringen, born at Kassel, 1850; enlisted, 1867; general of infantry, 1906; minister of war, 1909–13.

their compatriots and allies a day or two longer to complete their mobilization.

After the fall of Liége, the German cavalry, 50,000 strong, swept over the neighboring country. Skirmishes, which the Belgians magnified into bloody battles, at Tongres, Tirlement, Haelen, Diest, and Eghezee, marked the retirement of the Belgian forces to their principal line of defense at Louvain. There, on August 19, the Belgian army made its last important stand against overwhelming odds, was defeated, and driven back in a northwesterly direction on Malines and Antwerp. The German cavalry entered Brussels on the afternoon of August 20, without firing a shot. Then the astonished citizens of the Belgian capital witnessed the march through their city of regiment after regiment of German infantry on its way "to Paris."

Failure of the French Counter-Offensive. Meanwhile the French army had completed its mobilization and had begun to move forward all along the line. In the extreme south, a brigade of General Dubail's army stepped over into Alsace at Altkirch, carried the German trenches there, August 7, and entered the city of Mülhausen, August 8. General Pau * was in actual charge of the invasion of Alsace. He was hailed as a liberator by the French-speaking population, which has never ceased to long for reunion with France, although more than a generation has passed since Alsace-Lorraine was annexed by the conquering Germans in 1871. General Pau's forces penetrated as far north as Colmar. Simultaneously other French troops mastered the passes of the Vosges mountains and descended from the west into the Alsatian valleys. Further north, General Castelnau with five army corps invaded Lorraine, and occupied the line Delme-Morhange-Saarburg, August 18. Other French armies under Generals Langle de Cary and Ruffey moved up to face the Duke of Württemberg and the Prussian Crown Prince in the region of the forest of the Ardennes. A French army under General Lanrezac marched north into Belgian territory and took up a position in the angle formed between the Sambre and the Meuse rivers, south of Namur. In the meantime, two British army corps (a third, later) had been landed in France and had taken up a position north of Maubeuge on a line from Condé in France to Mons and Binche in Belgium, August 21. General Joffre,* the silent and corpulent commander-in-chief of the Republican armies, still held a considerable portion of his forces in reserve, waiting until the German plan of campaign should have disclosed itself. In the four days August 20–21–22–23 the advanced Franco-British lines felt the first shock of the German attack, and the French counter-offensive in Alsace-Lorraine definitely failed. In Lorraine, General Castelnau's invading army was attacked from three sides at once by General von Heeringen, the Crown Prince of Bavaria, and garrison forces from Metz. For the first time under fire, one French army corps suddenly gave way, and General Castelnau was able to extricate his defeated army only with the greatest difficulty. He now took the defensive before Nancy. In southern Alsace, the French invaders were compelled to retreat as rapidly as they had advanced, and to abandon practically all the ground they had won. The French "counter-offensive" in Alsace-Lorraine had been politically advantageous, in that it had stirred up all France to reconquer the "lost provinces"; but from a military standpoint it had been unsuccessful if not disastrous. The French armies of General Ruffey and Gen. Langle de Cary, which had taken up an advanced position in the forests of Belgian Luxemburg (the southeastern corner of Belgium) were thrown back on the French frontier by vigorous onslaughts from the Grand Duke Albert of Württemberg and the Crown Prince of Prussia. This retreat left the right wing of General Lanrezac's army unsupported, and caused him to withdraw from the Namur salient, against which the Germans had brought heavy pressure to bear. To the west of General Lanrezac, British forces had been stationed; their defeat and rapid retirement was the most spectacular feature of the general strategic retreat which General Joffre now conducted. To make clear its significance, a few words may be said about the situation in Belgium.

Mons and Namur. In occupying Liége (August 7), Brussels (August 20), and Ghent (August 21), the Germans had possessed themselves of three commanding railway centres, invaluable for the invasion of France. The Belgian field army had been brushed aside, separated from its allies, and driven back towards Malines and Antwerp, where it could be watched by a German reserve corps. To the south, however, the roads to France were still barred by the fortresses of Lille and Maubeuge, just across the border in France and Namur, on the Meuse River in Belgium. Behind Namur, a strong French army was supposed to be entrenched in the angle of the Meuse and Sambre rivers, with its wings at Dinant and Charleroi. North of Maubeuge, and between Charleroi and Lille, two British army corps * had arrived on August 21, and taken position along a line from Condé through Mons to Binche. Against this Franco-Belgo-British line, the army of Von Kluck was hurled. Namur succumbed to the German siege howitzers on August 22. The French force behind Namur, menaced on its right flank and strongly attacked on its left, fell back, after a savage struggle at Charleroi on August 22–23. Three German army corps appeared in front of General French's British Expeditionary Force, and one on its left flank. Obviously General von Kluck intended to overwhelm the two British army corps and turn the flank of the Allied line. Unwilling to be either outflanked or over-

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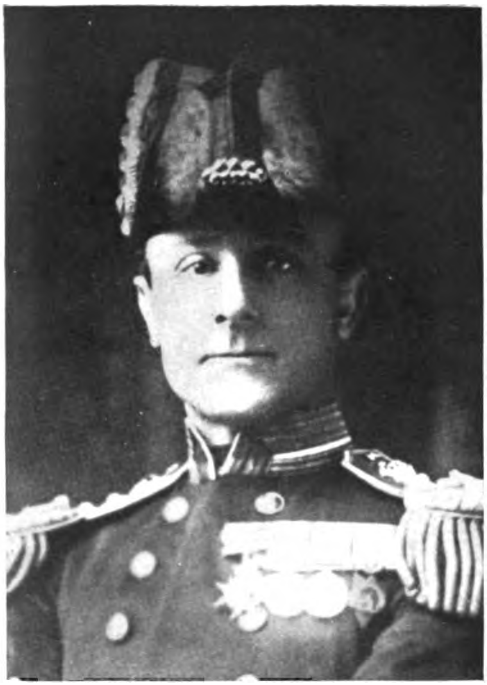
* Paul Pau, born at Montélimar, 1848; brigadier general, 1897; commander of the 16th, and subsequently of the 20th, army corps.

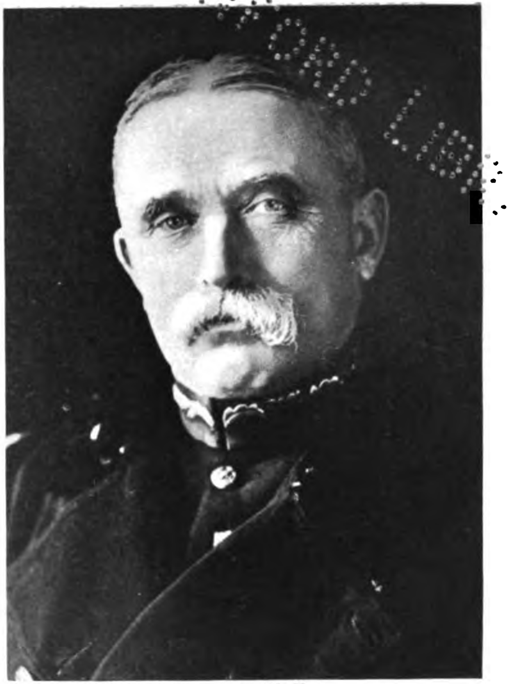
* Joseph Joffre, born in 1852, served in defense of Paris in the Franco-Prussian War of 1870–71, subsequently employed in the construction of forts at Enghien and in Cochin-China, won renown as military governor of Madagascar, and is famed for his fondness of mathematics and for his strict discipline.

* The Commander-in-Chief of the British Expeditionary Force was Field Marshal Sir John French, who was born in 1852; served in the navy four years and then in the Sudan military campaign of 1884–85; was a commander in the Boer War, 1899–1902; commander of the first army corps, 1901–07; field marshal, 1913; chief of the British General Staff since 1911. Under Sir John French, Lieut. Gen. Sir Douglas Haig commanded the first of the two British army corps: he was born in 1861; served in the Sudan and in South Africa; chief of the Indian Staff, 1909–12. Gen. Sir Horace Smith-Dorrien commanded the other British army corps: he was born in 1858; served in the Zulu War, in the Sudan, in India, and in South Africa; general since 1912.



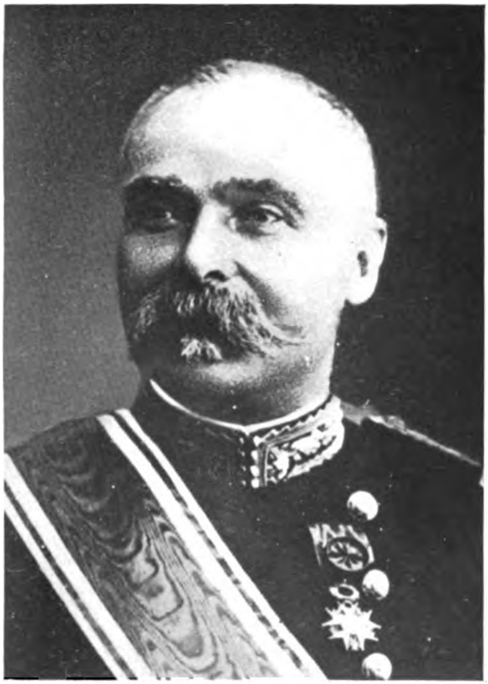
Photograph by Paul Thompson, N. Y.

VICE-ADMIRAL SIR. JOHN R. JELLICOE
COMMANDER-IN-CHIEF OF BRITISH NORTH SEA FLEET



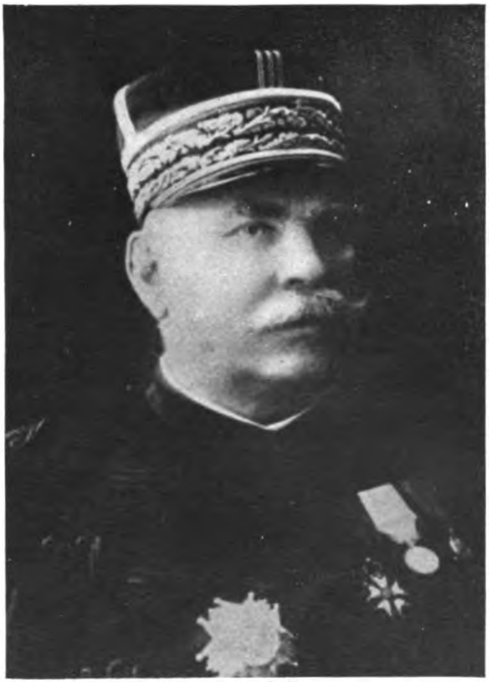
Photograph by Paul Thompson, N. Y.

FIELD MARSHAL SIR JOHN D. P. FRENCH
BRITISH COMMANDER-IN-CHIEF OF THE FORCES IN THE FIELD



Photograph by Paul Thompson, N. Y.

GENERAL PAUL PAU
COMMANDER IN THE MOVEMENT IN ALSACE



Photograph by Paul Thompson, N. Y.

GENERAL JOSEPH JACQUES CÉSAIRE JOFFRE
FRENCH COMMANDER-IN-CHIEF

BRITISH AND FRENCH COMMANDERS IN THE WAR

whelmed, General French abandoned his precarious position after a hot contest at Mons, August 23–24, and conducted a hasty retreat—an orderly flight, one might say—back into France. Trenches had been prepared at the line Cambrai-Le Cateau-Landrecies, south of Maubeuge; but the continued pressure of General von Kluck's superior numbers forced the British on July 26 to continue their flight, until on August 28 they rested on the line Noyon-Chauny-La Fère, having, in the words of General French, "thrown off the weight of the enemy's pursuit." In the six-day retreat, hotly pursued by General von Kluck's cavalry and his armored motor cars, struggling desperately to prevent its artillery and supply train from falling into the enemy's hands, the little British army had lost 230 officers and 13,413 men, and inflicted, so they claimed, a loss three times as great upon their pursuers.

Joffre's Retreat to the Marne. The sensational retreat of Sir John French should be regarded as one detail of the general strategic retreat ordered by General Joffre after the French defeats of August 20–23. The fate of the French army depended upon avoiding a decisive battle until the French forces could be concentrated upon an advantageous battle line and confront the Germans with equal or superior numbers. It would have been folly to rush troops northward to sure defeat. General Joffre, therefore, ordered a strategic retreat to the region south of the Marne River. All France north of a line from Paris to Verdun was abandoned to the German invaders. The French Government Offices were removed from Paris to Bordeaux; General Gallieni * began to prepare Paris for siege; and as General von Kluck swiftly followed the British southward towards Paris, until the noise of battle could be heard by the Parisians, the prediction seemed about to be verified that the Germans would be in Paris six weeks after the declaration of war. But General von Kluck, having arrived before Paris, suddenly swerved, September 4, to the east and marched towards Meaux and Coulommiers. Meanwhile the Crown Prince's army had captured Longwy, August 27, and Montmédy, and the whole German line had swept down over Northern France.

Battle of the Marne (September 6–10). After their long and exhausting retreat the Franco-British armies stood with their left resting securely on Paris, their right holding to Verdun, and their centre sagging south of the Marne River on the line Montmirail, Sézanne, La Fère Champenoise, Camp de Mailly, Vitry le François, Revigny. In reality Verdun was the centre rather than the extreme right of the French line, for the armies of Generals Castelnau and Dubail extended south from Verdun to the Swiss frontier in a line at right angles with the Paris-Verdun line. Between Paris and Verdun, along the main line of battle, the Allies disposed of considerably more than 1,000,000 men, while the Germans numbered but 900,000. For the first time, the German advance felt the shock of determined resistance; in the evening of September 5 General Joffre had given the order to attack, "to die rather than retreat." By shifting their right wing eastward, the Germans had concentrated the force of their blow against the centre of the Verdun-Paris line, between Vitry le François and Sézanne. If the Germans could break through the French centre the French army would be cut in two, and the eastern half ground to pieces against the German lines southeast of Verdun. The French centre stood solid against the German onset, however, and the battle of the Marne, September 6–10, marked the culmination and the decline of the German invasion. The decisive factor was the formation of a new French army out of three active and four second line divisions from Paris (a division is a third of an army corps, or about 15,000 men), which on September 7 moved out eastward from Paris, in the rear and on the right of General von Kluck's army. Turning west to confront these new assailants, General von Kluck was attacked from the south by the English army. With admirable generalship, and by dint of desperate fighting, Von Kluck escaped from the jaws of the Anglo-French trap and raced northwards to shake off the French forces which clung to his right flank. With General von Kluck, the whole German line fell back of necessity across the Marne River, as its right wing had been turned. The supreme effort of the German army had failed. The field army of France remained intact, and was now numerically superior.

Battle of the Aisne. With characteristic thoroughness, the Germans had prepared in their rear a strong line upon which to fall back in case of defeat. When the British and French rushed north on the heels of General von Kluck after the battle of the Marne, they were halted abruptly on September 12 at Soissons on the Aisne River. By September 15 it was clear that the Germans were not simply pausing in their retreat, but were occupying a predetermined battle line of great natural strength, prepared with trenches for infantry and concrete foundations for the big German guns. From the hills of Noyon, just north of where the Aisne River flows into the Oise, the line followed the heights on the northern bank of the Aisne—where the French had placed the forts of La Fère and Laon—and then, leaving the Aisne, the line bent southward almost touching Reims and extending across the forested ridge of the Argonne to the region of Verdun. The French drive was directed northward against Laon, the German drive southward against Reims. Both were checked. After an excessively vigorous bombardment of Reims on September 28, the battle along the Aisne practically came to a close, although the opposing armies viewed each other fiercely from their parallel lines of trenches. While the armies in the centre were coming to a deadlock, events of great interest were transpiring on both wings. On the east, the Crown Prince sent about four army corps to cut in south of Verdun from the east. The Germans had already reduced the fort of Troyon, just south of Verdun, to a heap of ruins, and had reached St.-Mihiel, September 26, a little further south on the Meuse, thus threatening to surround the fortress, when the French reënforced their line at this point. St.-Mihiel continued, however, to be a possible starting point for a strong German aggressive. On the west of the long battle line, the Germans and the French engaged in a "race to the sea." French troops were hurried northward by way of Amiens with the hope of enveloping the right wing of General von Kluck's army, and German troops were marched hastily northward to frustrate the French flanking movement. The net result was the extension of the battle line from the confluence of the Aisne and the Oise rivers to Flanders and the Channel coast. French reserve troops, detachments from the French active army, the British Expeditionary Force, British Indians, Senegalese, and Turcos went to make up this prolongation of the Allies' front.

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* Joseph Gallieni, born 1849; served in the French Sudan and Indo-China; Governor-General of Madagascar, 1896–1905; commander of the garrison of Paris since the outbreak of the war.

Fall of Antwerp. Since the last days of August the Belgian army had been annoying the Germans by occasionally sallying forth from their position at Malines and Antwerp. On September 27 the Germans bombarded and occupied Malines, and on the following day began in earnest to attack the forts surrounding the supposedly impregnable Belgian stronghold of Antwerp. On September 29 one of the outlying forts was put out of action, and another blown up by the explosion of its magazine. A few British marines and bluejackets were hurried to reenforce the Antwerp garrison, but to no avail, for the German howitzers, and above all the 42-centimeter siege pieces, were pounding the Belgian fortifications to bits. It was not necessary for the Germans to surround and besiege the city; they had simply to batter the forts and drive the Belgians out by artillery fire. During the night of October 8 the Belgian and British forces forsook the doomed city, and on the following day the Germans entered in triumph. The Belgian army then took up a position on the Allied line in Flanders.

Battle in Flanders. In the last week of October there began a terrific battle in Flanders. Having taken Antwerp, the Germans massed 12 army and 4 cavalry corps between the Lys River and the sea for a drive towards the French seaports of Dunkirk and Calais. The Allies had to hold their line at all costs, or permit the Germans to gain a foothold on the Channel whence England would be menaced and the Allied flank attacked. The brunt of the battle was borne at first by the battered Belgian army, which held the Germans back of the Yser River at Nieuport until British warships could draw into range and open fire with their heavy guns, forcing the Germans to desist. Further inland, between Nieuport and Ypres, the German advance was checked, after all other means had failed, by the desperate expedient of cutting the dykes and flooding the country. The town of Dixmunde, in this region, was finally won by the Germans after terrible fighting. At Ypres, the British army was savagely assailed and beaten back, but its line was not broken. While villages and cottages were being laid in ruins by incessant bombardment, the contending armies sought shelter in trenches. By the end of November, the battle of Flanders, like the battle of the Aisne, had lost its fury and become a dreary process of trench-digging. Here and there, a few hundred yards could be gained by one side or the other, by hurling masses of infantry at the opposing trenches; but for such sacrifice of life, the strategic gain was small. The rigors of winter, moreover, had added to the sufferings of the soldiers, who had to settle down in trenches often filled with water. Newspapers and gifts from home, and a liberal supply of tobacco, contributed to make more endurable a cruel experience.

"German Atrocities" in France and Belgium. No sooner had the German invasion of Belgium and France begun than reports began to come in from the invaded countries alleging that the Germans were committing the most horrible atrocities and outdoing the Huns in ferocity. First of all, the Germans were charged with using dum-dum bullets, i.e., soft-nosed bullets which spread on impact and produce a gaping and needlessly brutal wound. The Germans replied by accusing the French and British of the same offense; and in the confusion of contradictions the truth was somewhat difficult to discern. Similarly the crime of killing wounded soldiers in cold blood was charged against each side by the other. Other acts of the Germans, however, were comparatively well substantiated. The beautiful cathedral at Reims was bombarded because the French were alleged to have established an observation post in its tower. The Belgian city of Louvain, with its wonderful University and its Church of St. Pierre, was deliberately burned by the Germans, because, said the German official report, the civilian population had concerted an attack on the German troops which occupied the town. The case of Louvain figured largely in the American press, but it was only one of numerous similar instances where towns or villages had been ruthlessly burned, and many of their inhabitants shot, because they resisted the invaders. The spirit which prompted these acts may be judged by the following extract from General von Bülow's proclamation to the inhabitants of Liége: "The inhabitants of the town of Andenne, after having declared their peaceful intentions, have made a surprise attack on our troops. It is with my consent that the commander-in-chief has ordered the whole town to be burned and that about 100 people have been shot. I bring this to the knowledge of the city of Liége, so that the citizens of Liége may realize the fate with which they are menaced if they adopt a similar attitude." Similarly at Namur the Germans took hostages from the civilians and warned the population, "If any outrage is committed in the street the 10 hostages will be shot." In the city of Wavre, it is alleged, the German general demanded a war levy of 3,000,000 francs as a fine for the resistance offered by the inhabitants, and threatened, "The city of Wavre will be burned and destroyed if the levy is not paid in due time, without regard for any one; the innocent will suffer with the guilty." This was precisely the most distressing circumstance, that the innocent were made to suffer with the guilty. Evidence collected on oath by a French commission of inquiry tended to show that in countless cases the horrors of war had been brought home to innocent women and children. For instance, at Sommeilles, which was burned by the Germans on September 6, two women, and four children, aged respectively 11, 5, 4, and 1½ years, were afterwards discovered lying in a pool of blood in a cellar where they had been cruelly butchered. For such cases, the German officers could not always be held responsible, for in spite of the strictest discipline dastardly acts will be committed by the occasional criminal in the ranks of any army. As German officers frequently replied to protests, "It is war."

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AT
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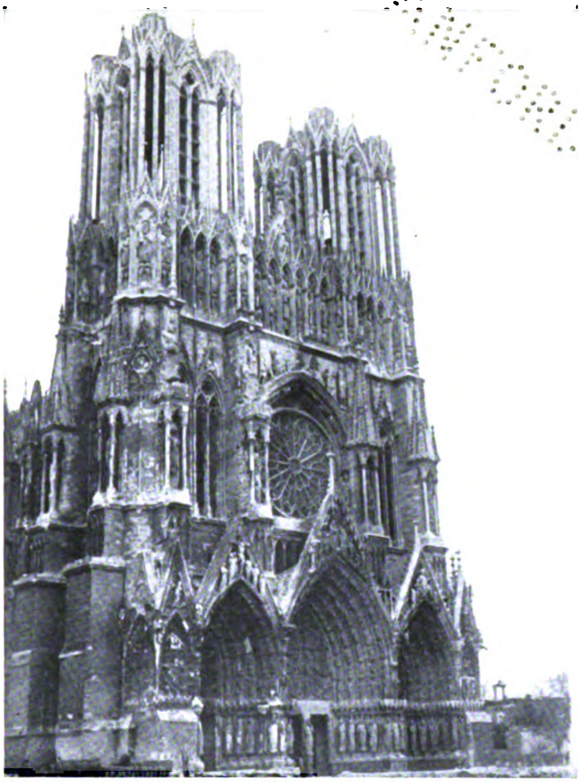
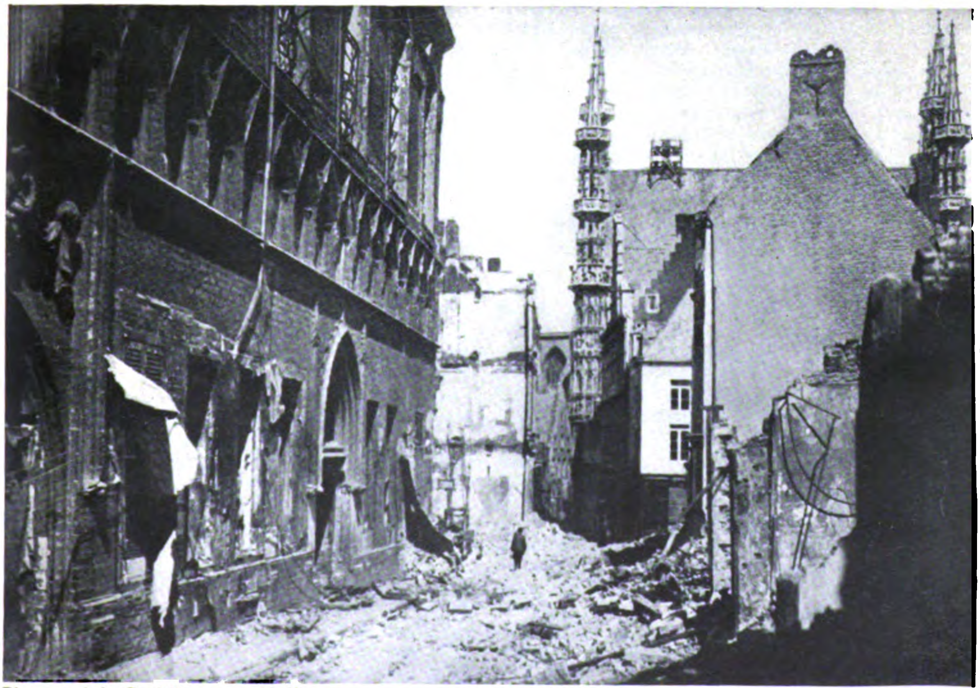


VIEW OF
FRONT FAÇADE
AFTER
BOMBARDMENT

Photograph by Paul Thompson, N. Y.



Photograph by Paul Thompson, N. Y.

A STREET IN LOUVAIN—RUINS OF THE LIBRARY ON THE LEFT

THE WAR IN EUROPE—SCENES OF DESTRUCTION

Polish Theatre of War. During the first few months of the War of the Nations, France, Britain, and Belgium looked for Russia to invade Germany with her vast armies and force Germany to turn her attention to the east. It was generally assumed that if the Allies could hold out until Russia's forces were mobilized, the Russian armies would sweep like a tidal wave towards Berlin, while the weakened German line in the west would be beaten back out of France and Belgium. But month after month dragged by, and although the fighting forces surged back and forth on the eastern frontier of Germany, there was no sign of the "tidal wave." In order to understand the failure of the Russians to overwhelm Germany in the east, one must realize that Russia had to battle not only against the well-trained and perfectly-equipped soldiers of Germany, and the somewhat less efficient soldiers of Austria-Hungary, but also against geography. European Russia, it will be observed, forms roughly a huge wedge, with Russian Poland as the rather blunt point of the wedge, thrust in between German East Prussia on the north and Austrian Galicia on the south. The point of the wedge is only 200 miles from Berlin, but before the wedge could be driven into Germany, the Germans would have to be crowded out of East Prussia and the Austrians out of Galicia. In other words, no army would be safe in proceeding from Russian Poland against Berlin, as long as the Germans from the north and the Austrians from the south could close in and cut off the communications of that army with its sources of supply in Russia. For this reason, the chief Russian armies, instead of marching straight westward from Warsaw to Berlin, were deflected to the north and to the south.

Immediately upon the declaration of war, August 1, followed numerous engagements all along the frontier; these were merely skirmishes between the "covering troops," principally cavalry, which screen the mobilization and advance of the main armies. By August 10, the four army corps of the Warsaw district were ready for action in Russian Poland; and four more were simultaneously mobilized in the Vilna district, opposite East Prussia. By August 21, 18 more Russian army corps had come up: 4 from Petrograd, 5 from Moscow, 2 from Kazan, 5 from Kiev, and 2 from Odessa. Of these 26 army corps, 8 were detailed to deal with the 5 army corps left in the east by Germany, and 18 were massed against the Austrians' 12.

Let us take first the campaign against the Germans, in the north. In invading East Prussia, the Russians had to overcome three serious obstacles. First there was a chain of almost impassable lakes, marshes, and rivers stretching from Johannisberg to Insterburg. Behind this lake barrier lay the fortified camp of Königsberg with one German army corps, in the north, and Allenstein, with another army corps, in the south (about 30 miles north of the frontier). Still further west was the strong line of the Vistula River, defended by Danzig, Marienburg, Graudenz, and Thorn. Apparently the main bodies of Russian troops avoided the lake country near the eastern frontier of East Prussia. One Russian army proceeded directly westward from Kovno, defeated the Germans at Gumbinnen (August 17–23), pressed on to Insterburg, and drove the Königsberg army corps back into the shelter of its fortifications. Simultaneously 4 or 5 Russian corps invaded East Prussia from the south, between the lake barrier on the east and the Vistula on the west, and with irresistible impetus pressed back the two German army corps towards the line of the Vistula. But suddenly the Russians discovered on their rear and flank two fresh German army corps, which had been hastily transported by rail from Belgium and detrained near Allenstein. In the battle that then took place, August 29–31, in the neighborhood of Allenstein, Ortlesburg, and Tannenberg, two Russian army corps were completely routed. At the end of the three days' fighting the German general Von Hindenburg * could report the capture of 70,000 Russians, including 2 generals, 300 officers, and the equipment of two whole army corps. The news arrived in Berlin in time to transform the anniversary of Sedan (September 1) into a triumphal celebration of Von Hindenburg's gigantic victory. General von Hindenburg followed up his success by driving the Russians completely out of East Prussia.

In their invasion of Austrian Galicia, in the south of the Polish theatre of war, the Russians were more successful, although here, too, the terrain was unfavorable. The broad and desolate Pinsk marshes, on the southern boundary of Poland, had to be avoided; river after river had to be crossed under the fire of Austrian guns; and very strong Austrian positions had to be encountered at Lemberg (between the Bug and the San rivers), at Jaroslav and Przemysl (on the San River), and at Cracow (on the Vistula). By August 10, 12 Austrian corps had been mobilized in Galicia: two of them marched northeast along the railway from Cracow towards Kielcé in Russian Poland, west of the Vistula; seven advanced in a northeasterly direction from the San River against Lublin and Chelm in Russian Poland; and three were stationed east of Lemberg. The three last-mentioned army corps, constituting the Austrian right, even when reënforced by troops of the seventh, thirteenth, and fourteenth army corps, and by several brigades of the Landsturm, proved incapable of detaining the Russian armies which swept up the valley of the Dniester and overran all the eastern half of Galicia. Against Lemberg, which is both an important entrenched camp and the centre of the Galician railway system, the Russian armies commanded by General Ruzsky advanced in force, inflicting—by Russian report—a severe defeat on the Austrian armies which attempted to defend the city. The Austrians represented their evacuation of Lemberg as a strategic retreat. At any rate, the Russians took possession of the city on September 2 and gave it the genuinely Slavic name of Lvov. Halicz and Nickolaiev, south of Lvov, fell a few days later. Now if the Russians advanced westward from Lvov they would cut off the retreat of the central Austrian army, which had won a battle at Krasnik in Russian Poland, August 23–26, and had advanced victoriously into Poland almost as far as Lublin. In the first week of September the Russians, attacking from the east and from the north, made their grand attempt to rout this main Austrian army. On a battle line 175 miles long 1,000,000 Austrians fought 1,500,000 Russians. The Russians registered important successes at Zolkiev a few miles north of Lvov, September 4, at Rawaruska, further to the northwest, September 6–8, and at Tomaszov, still further to the northwest, just across the Polish frontier. These points lie approximately on a line running northwest from Lvov in Galicia to Lublin in Russian Poland. A little less than 50 miles southwest of the Lublin-Lvov line and parallel to it flows the San River, defended against attack from the direction of Lvov by the two strong fortresses of Przemysl and Jaroslav. This was perhaps the strongest defensive position in Galicia, as an army taking up the line of the San would have its flanks protected by the Vistula River in the north and the Carpathian Mountains in the south. In a mad retreat that may well have been a rout the Austrian right fled eastward and the Austrian centre fell back southward to the San and the angle between the San and the Vistula. There the battered Austrian army might hope to reform its lines, while the forts at Jaroslav and Przemysl held back the Russians. But Jaroslav fell on September 23, and although Przemysl still held out against an encircling ring of Russians, the line of the San had to be abandoned. Eighty miles further west, at Tarnow, where the Donajec River flows north across Galicia, the Austrians rallied for a last stand before Cracow. Their field army had been badly mauled, in spite of the support given by two German army corps in Western Poland and the return of the two Austrian army corps which had been sent to France at the opening of the war. The Russians were now masters of most of Galicia and were sending their cavalry on raids across the Carpathians into Northern Hungary, and down into Bukovina, southeast of Galicia.

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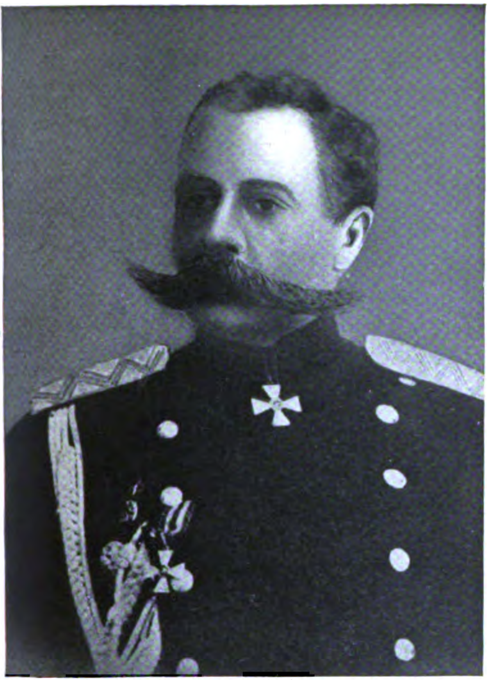
* Field Marshal Paul von Beneckendorff und von Hindenburg, German commander-in-chief in the east. The Russian operations in East Prussia were conducted by General Rennenkampff, under the general direction of the Grand Duke Nicholas Nicholaevitch, Russian generalissimo.

It will be remembered that before the Russians could safely advance on Germany from Warsaw they would have to clear the Austrians out of Galicia, and the Germans out of East Prussia; then with one flank resting on the Carpathian Mountains and the other on the Baltic Sea, the Russian army might begin its grand march on Berlin. The one part of this task, the conquest of Galicia, had been well-nigh completed. But in the north, the Germans, far from being driven out of East Prussia, had actually taken the offensive. At least three, and possibly as many as six, German army corps had been rushed from the Franco-Belgian theatre to reënforce General von Hindenburg's army. In the latter part of September he felt strong enough to undertake an invasion of Russian Poland in the direction of Byelostok. If successful, his move would cut the important railway line which connected Petrograd with Vilna and Warsaw. The Russians met him and checked him at Augustowo, where a sequence of heavy engagements occurred in October. The second week in October witnessed an advance of German and Austrian forces into Western Poland, against Warsaw. In the same week the Russian aggressive in Galicia was abandoned. Late in October fresh Russian troops came up, and the Russians made advances along the whole front, in Galicia, in Western Poland, and in the region of Augustowo. Jaroslav, which had been temporarily abandoned, was now retaken. In East Prussia, the Russians again assumed the rôle of invaders, taking Wirballen, Goldap, Angerburg, and Gumbinnen, in November. Throughout November the German and Austrian forces in Western Poland continued their efforts to reach Warsaw, and a series of big battles were fought in the region west of Warsaw. Early in December, the Germans claimed that they had broken through the Russian lines southwest of Warsaw at Lodz and had captured 100,000 Russian prisoners. On December 18 the Russians admitted that their line in Poland had been compelled to fall back, but ascribed the retreat to strategy rather than to defeat. The Austrians, apparently, had flung their forces as far north as Przedborz and Piotrkow, while the Germans held the battle line north of Piotrkow in front of Lowicz and Skierniewice, confronting the Russians, who stood behind the Bzura. In Galicia, the Russian armies which had been closing in upon Cracow again fell back, until they reached the Nida. In Bukovina, strong Austrian forces were threatening the extreme left wing of the Russian line. The situation after five months of fighting in the Polish theatre of operations was not, then, exactly encouraging for the Russians. They had had time to bring their troops from farthest Siberia; they had engaged in protracted and costly battles; and still there were unconquered German armies in East Prussia and in Russian Poland. The great achievement of the Russian campaign had been the shattering of the Austro-Hungarian army in Galicia, although it could not yet be said that the Austro-Hungarian army had been completely demoralized. In addition, the Russians had drawn about half of the German forces to the east, that is, about 48 army corps, and thus prevented Germany from continuing her vigorous aggressiveness in France.

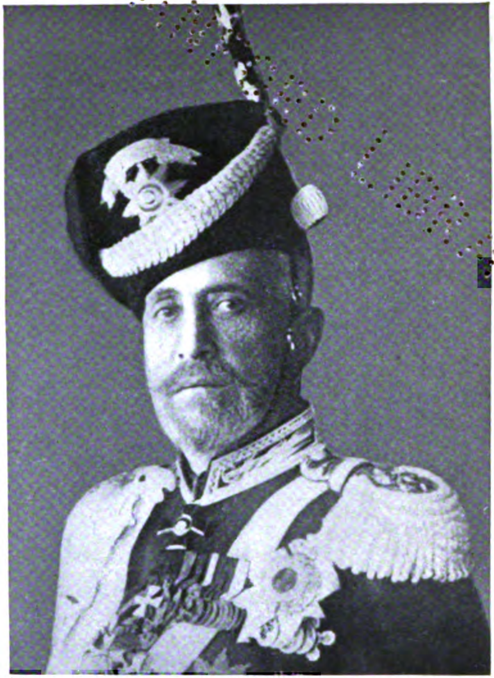
Plight of the Polish Nation. In reading the history of the military operations in the Polish theatre of war, one should not entirely forget the tragic plight of the Polish nation. The once glorious kingdom of Poland, it will be remembered, had been partitioned at the end of the eighteenth century between Russia, Prussia, and Austria. Consequently, although the Poles constituted a homogeneous nation of 23,000,000, possessing a national literature, a common language and religion (Roman Catholic), occupying the plains of Russian Poland, Prussian Posen, and Austrian Galicia, and passionately desiring to restore their political unity and freedom, they were now compelled to fight in the three opposing armies, and to furnish the battleground for Russia, Germany, and Austria-Hungary. The march and counter-march of millions of soldiers, and the havoc wrought by hundreds of huge howitzers, devastated Poland more completely than Belgium. Without food or homes the Polish peasants perished miserably. Yet for the future, perhaps a slight ray of hope could be discerned. Russia, long the cruel oppressor of the largest section of Poland, now feared a Polish revolt and promised Poland autonomy in return for loyalty. Early in August the Russian commander-in-chief, Grand Duke Nicholas, issued the following eloquent manifesto to the Poles:

"The hour has sounded when the sacred dream of your fathers may be realized. A hundred years ago the living body of Poland was torn to pieces, but her soul survived and she lived in hope that for the Polish people would come



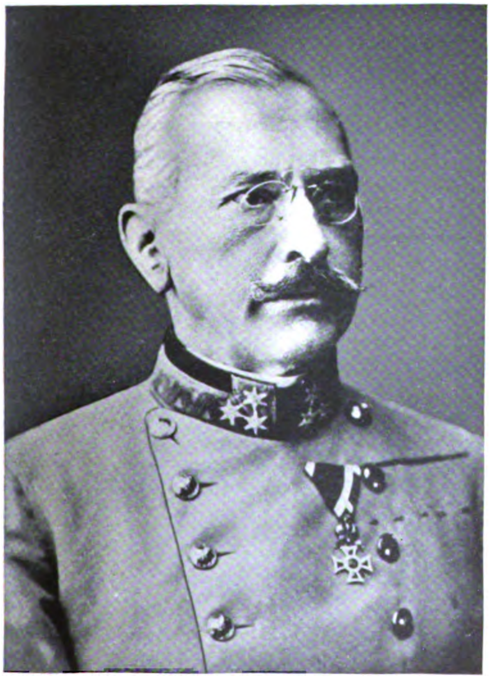
Photograph by Paul Thompson, N. Y.

GENERAL PAUL CHARLES VON RENNENKAMPFF
RUSSIAN COMMANDER ON PRUSSIAN FRONTIER



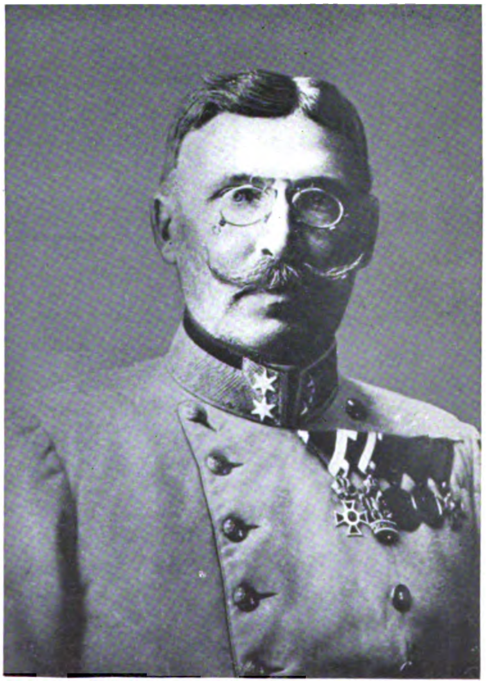
Photograph by Paul Thompson, N. Y.

GRAND DUKE NICHOLAS NICHOLAEVITCH
RUSSIAN GENERALISSIMO



Photograph by Paul Thompson, N. Y.

GENERAL VICTOR DANKL
AUSTRIAN COMMANDER AT KRASNIK AND LUBLIN



Photograph by Paul Thompson, N. Y.

GENERAL MORITZ AUFFENBERG
COMMANDER OF THIRD AUSTRIAN ARMY

RUSSIAN AND AUSTRIAN GENERALS

an hour of regeneration and reconciliation with Russia. The Russian army brings you the solemn news of this reconciliation, which effaces the frontiers severing the Polish people, whom it unites conjointly under the sceptre of the Czar of Russia. Under this sceptre Poland will be born again, free in her religion and her language, and autonomous. Russia expects from you only the loyalty to which history has bound you. With open heart and a brotherly hand extended, great Russia comes to meet you. She believes that the sword which struck her enemies at Gruenewald is not yet rusted. Russia from the shores of the Pacific Ocean to the North Sea marches in arms. The dawn of a new life commences for you. In this glorious dawn is seen the sign of the Cross—the symbol of the suffering and the Resurrection of a people." Similar appeals to the Poles were made by Austria-Hungary, who had undoubtedly accorded the Poles within her borders far better treatment than was received by the unfortunate Poles in Prussia or in Russia. As far as Prussia was concerned, no promise could efface from their memory the wrongs suffered under the harsh Prussian administration, which had pursued a deliberate policy of settling Germans on the land formerly owned by Poles.

Campaign Against Servia. Even had Austria-Hungary been able to send all her armies south to "punish" Servia, her task would not have been altogether an easy one; when, however, the greater part of the Austro-Hungarian forces had to be used for defense against Russia, the campaign against Servia became extremely difficult. The little Slav State, poor and small as it might appear, could boast a war army of 250,000 men, mostly seasoned veterans, besides a territorial reserve of 50,000; Servia's ally, Montenegro, moreover, could place in the field about 50,000 hardy mountaineers, renowned for their valor. In spite of the fact that Servia lacked big guns, aëroplanes, and sanitary service, and in spite of the shortage of modern rifles in the Servian army, the immense advantage of recent experience in war, and the glowing memory of victories at Kumanovo (1912) and at Bregalnitza (1913), gave the Servians good reason to enter the conflict with confident courage. The mobilization of the Servian forces, ordered on July 25, was accomplished with such alacrity that by the 28th, when Austria-Hungary declared war, 10,000 soldiers were available in the vicinity of Belgrade, to keep that city from falling into the hands of Austrian invaders. Belgrade, as a glance at the map will show, lies at the junction of the Save and Danube rivers, and divides the northern frontier of Servia into two sections. East of Belgrade the broad Danube forms the boundary between Servia and Hungary; west of Belgrade the Save separates Servia from Croatia-Slavonia; flowing into the Save from the south, the Drina River marks off Servia from Bosnia on the west. Servia's main forces were initially concentrated at Lazarevatz, Arangelovatz, and Palanka, on a line just south of Obrenovatz, Belgrade, and Semendria. The reason will be clear to any one who observes that Obrenovatz, Belgrade, and Semendria command three railways and two river valleys leading from the Austro-Hungarian frontier southwards into the heart of Servia. Other forces were distributed along the frontier to guard against an unexpected attack. As a precaution, the government offices were moved from Belgrade, upon which city the Austrians immediately opened fire, to the safer location of Kragujevac, and later to Nish. From July 29 to August 12 the Austrians contented themselves with bombarding Belgrade and making numerous but insignificant attempts to cross the frontier at various points. The first serious movement against Servia began on August 12 and was directed not against Obrenovatz-Belgrade-Semendria, but against the northwestern corner of Servia, in the angle formed by the Drina and Save rivers. On August 12 strong Austrian columns were thrown across the Drina River at Liubovia, at Zvornik, and at Losnitza, and across the Save River at Shabatz. Obviously the intention was to invade the northwestern corner of Servian territory simultaneously from the north and from the west, and to converge on the Servian military depot of Valievo. With frantic haste General Putnik, the Servian commander-in-chief, brought his main armies by forced marches westward to meet the Austrian invasion. In the mountainous northwest corner of their country, between Shabats on the Save and Liubovia on the Drina River, the Servians fought the "battle of the Jadar," August 16–23, to prevent the junction of the invading columns. So successful were the Servian tactics that the Austrians were defeated at all points, and compelled to retreat into Austria-Hungary under cover of darkness on the night of August 23–24. In repelling the 200,000 Austrian invaders, the Servians, had lost 3000 killed and 15,000 wounded; but they had killed some 6000 of the enemy, wounded perhaps 30,000, and captured 4000: they had, in addition, captured 46 cannon, 30 machine guns, and much needed stores of rifles and ammunition. It was now the turn of Austria-Hungary to suffer invasion. Early in September the Servians took Semlin, across the river from Belgrade; while another Servian army struck into Southern Bosnia towards Sarajevo. These forces were withdrawn when Austria-Hungary again assumed the offensive, massing 250,000 men against the same northwest corner of Servia. In the second week of September the Austro-Hungarians advanced on Valievo from the direction of Zvornik and Liubovia, encountering fierce resistance, and suffering a severe check on their right wing, September 15. While the fighting in Northwestern Servia was continued, another Austrian column, only six battalions strong, attempting to invade Servia near Semendria, was cut to pieces on November 9. On November 15, the Austrian offensive, which had begun to move forward again in Northwestern Servia, approached Valievo in such force that the Servians fled precipitately, leaving 6000 men and large quantities of military stores to be captured. The fifth Austro-Hungarian corps, under General Frank, after having besieged Belgrade since July 29, succeeded at last in taking that city at the point of the bayonet, December 2. The Servian army was said to have lost 100,000 men since the beginning of the war. Just when Servia's complete collapse was momentarily expected, news was received that the Servians had broken through the centre of the advancing Austrian army, recaptured the towns of Ushitza and Valievo, and inflicted a crushing defeat on two Austrian corps, capturing 20,000 prisoners, 50 cannon, and munitions in immense quantity.

The Austrian right wing was driven back in disorder across the Drina, where it was still further punished by the Montenegrins at Vishegrad.* On December 14 the Servians recaptured Belgrade, and King Peter was able to reenter his former capital at the head of his victorious army, while all Servia rejoiced over the announcement that not a single Austrian invader remained on Servian soil. Reports from Vienna (via Rome and London) placed the Austrian losses at 100,000 men. As December drew to its close, the Servians and Montenegrins were seen once more advancing into Bosnia.

ENTRANCE OF TURKEY INTO THE WAR. In the early stages of the war, two German cruisers, the *Goeben* and the *Breslau*, sought to escape capture by entering the Dardanelles. International law prescribed that these belligerent warships should either be compelled to put out to sea again, or, if they elected to remain in Turkish waters, be interned and dismantled. The Turks, however, allowed the cruisers to lie in Turkish waters without dismantling; and presently the Porte announced that the *Goeben* and the *Breslau* had been purchased from Germany by Turkey. In defiance of protests from the Allied Powers, Turkey refused to repatriate the German crews of her newly-acquired vessels. She needed the skillful German engineers and gunners in her navy. The irritation caused by this episode was aggravated by the Porte's declaration that the Capitulations were about to be abrogated, September 10 (see TURKEY), and by the closing of the Dardanelles, September 28. Rumors of Turkish military preparations and reports of German officers sent to Turkey gave rise to the belief that Turkey would speedily make common cause with Germany. The failure of the Germans to achieve any decisive victory, however, and the seeming collapse of Austria-Hungary exercised a calming influence upon even the most jingoistic of the Young Turks, and counsels of caution prevailed until the end of October. On October 29, the *Breslau*, now masquerading under the name of the *Midülü*, bombarded the Russian Black Sea port of Theodosia. The *Hamidieh*, another Turkish warship, simultaneously opened fire on Novorrossisk, and Turkish torpedoes destroyed the Russian gunboat *Donets*, one French, and three Russian steamers at Odessa. These hostile acts were interpreted by Russia as inaugurating a state of war between Russia and Turkey. On October 30 the Russian ambassador asked for his passports. Belated explanations offered by the Porte were refused. A few days later, on November 5, Great Britain and France declared war on Turkey. At the same time, Great Britain formally annexed the Turkish island of Cyprus (see CYPRUS). Egypt also, which was nominally still a vassal State of the Sultan, was declared by Great Britain to be independent of Turkey as a result of the war. A British "White Paper" containing "Correspondence respecting the events leading to the rupture of relations with Turkey," published in November, adduced documents to show that Great Britain in August had disclaimed all intention of annexing Egypt and had promised to uphold the territorial integrity of the Ottoman Empire, on condition that Turkey would observe scrupulous neutrality and make no attempt to foment rebellion in Egypt. Although Tewfik Pasha, the Turkish ambassador in London, had informed Sir Edward Grey, August 13, that his country would be strictly neutral, Sir Edward Grey was able on September 23 to accuse Turkey of breach of neutrality: "German officers and men," he alleged, "are participating increasingly in Turkish fleet and Dardanelles defenses, and not only has Turkey failed to send away the German officers and crews, as she promised, but she has admitted more overland, and they are now in active control of the *Goeben* and the *Breslau*. The capital is undoubtedly now under the control of the Germans. If his Majesty's government so desired, the present state of things affords ample justification for protesting against violation of neutrality." Likewise the Russian government issued another "Orange Book" containing 98 documents calculated to confirm the conviction that German influence had involved the Turkish government in war against its own better judgment. In vindication of its course, the Turkish government, in its turn, issued an apologetic *communiqué*, November 13, asserting that Great Britain's unfriendly seizure of two warships under construction for Turkey in British shipyards had made the purchase of the *Goeben* and the *Breslau* necessary to Turkey's defense. In bitter sentences the Turkish *communiqué* accused the British of acting ever as the foes of Turkey and of Islam, while pretending friendship. The Turkish Speech from the Throne, December 15, further justified Turkey's entry into the war on the ground that the Russian Black Sea fleet had—according to Turkish reports—taken the initiative in opening hostilities.

The Germans welcomed the entry of Turkey into the war for two reasons. In the first place, the Turks were expected to stir up the Moslem populations of Morocco, Algeria, Egypt, and India to engage in a Holy War against Great Britain and France. How successful the "Holy War" was in inflaming the imaginations of the Egyptians and Indians, events alone will prove; but as far as the condition of these two great British empires was known at the close of the year, there seemed to be no evidence of popular excitement. In Morocco, however, French rule was seriously menaced by Mussulman uprisings. In the second place, the Turkish army was expected to engage the attention of a considerable body of Russian and British colonial troops, who would thus be prevented from participating in the battles of Poland and France. In this respect, the Germans were not entirely disappointed, although the Turkish army won no notable victories. Several Russian army corps were engaged in the Transcaucasian region, where a strong Turkish army attempted to invade Russian territory. Confused reports of alternate Turkish invasions of Russian Transcaucasia and Persia, and Russian invasions of Turkish Armenia, indicated the continuance of heavy fighting throughout November and December in the region east of the Black Sea. In the meantime the Turks had been preparing for an invasion of Egypt. A Turkish army, whose size may well have been imposing, but whose strength it was as yet impossible to ascertain, advanced from the east across the Sinai Peninsula against the Suez Canal. The guns of British warships in the canal, and the presence of

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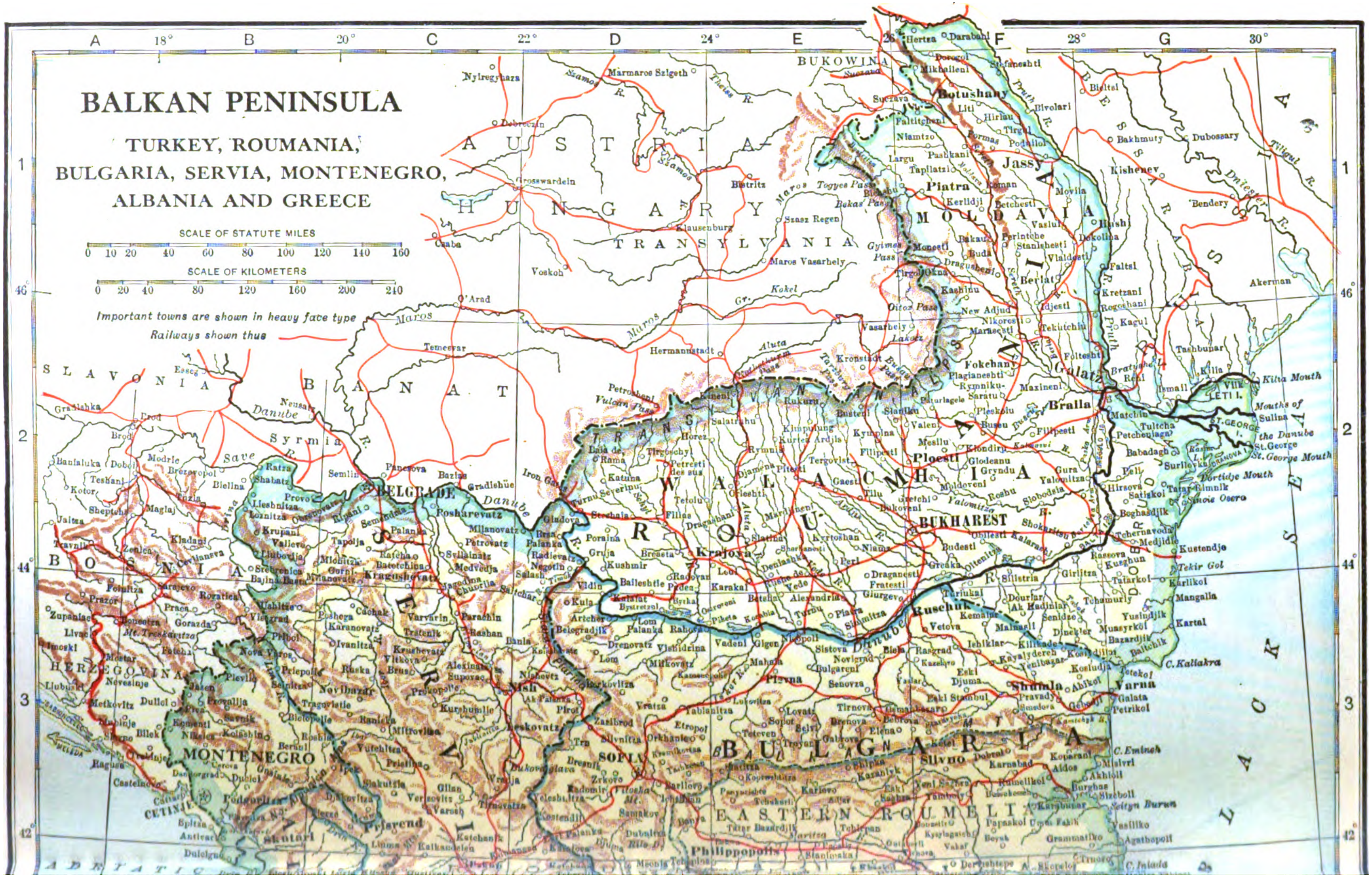
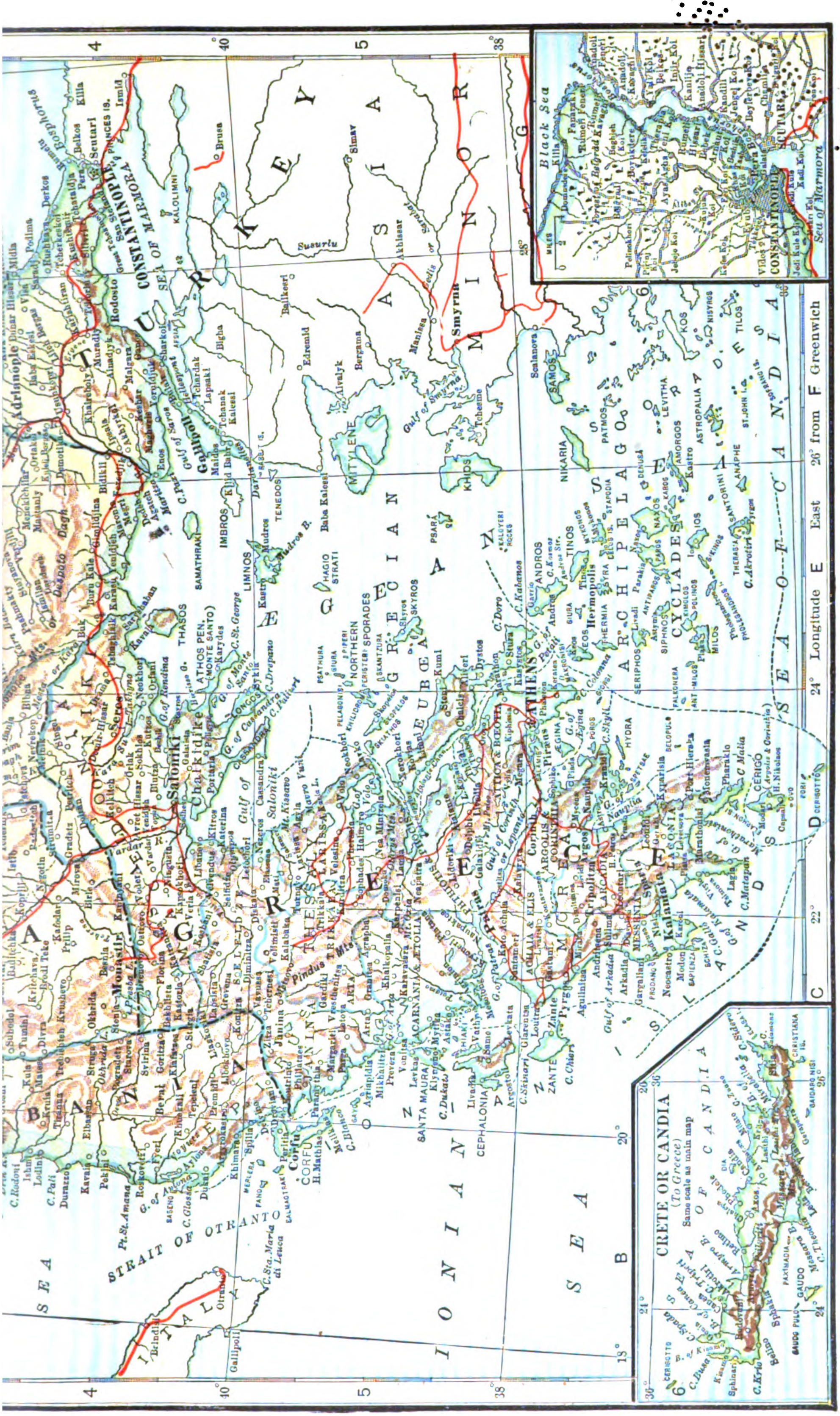
* The Montenegrins had up to this time played a comparatively unimportant rôle, bombarding Cattaro (near Cettinjé) and joining with Servian movements against Bosnia-Herzegovina.



BALKAN PENINSULA

TURKEY, ROUMANIA, BULGARIA, SERVIA, MONTENEGRO, ALBANIA AND GREECE



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considerable British forces in Egypt, rendered difficult the task and improbable the success of the Turkish army of invasion.

SMYRNA INCIDENT. In November the report that the Turks had fired upon the launch of the United States ship *Tennessee* at Smyrna aroused great indignation in the United States, until the Porte explained that the shots were not directed at the launch and were fired merely as a warning that the harbor was mined. For the *Hodeida* incident, see TURKEY.

JAPAN AND TSINGTAO. On August 19 the Japanese representative in Berlin handed to the German Foreign Office an ultimatum demanding —or, rather, "advising"—that Germany should immediately withdraw all warships from Chinese and Japanese waters and deliver up the entire leased territory of Kiaochow before Sept. 15, 1914, "with a view to the eventual restoration of the same to China." Kiaochow, it should be understood, was a bay on the northern Chinese coast, with 117 square miles of surrounding territory, which had been seized in 1897 and then leased from China (for 99 years) by Germany as compensation for the murder of two German missionaries in China. At Tsingtao or Tsingtau (as the Germans spell it), on the leased ground, the German government had at great expense erected strong fortifications, commanding the bay; under the shelter of frowning forts the Germans had constructed a magnificent floating dock which made Tsingtao a splendid naval base. Leading back from Tsingtao through the Chinese city of Kiaochow (which must not be confused with the leased territory of Kiaochow, outside of which it lay) to Wei-Hsien and Tsi-nan, the Germans had constructed the Shantung Railway. Upon the refusal of the German government to comply with the terms of her ultimatum, Japan forthwith declared war, August 23. The reasons for this step were set forth by Baron Kato, the Japanese foreign minister as follows:

"Early in August the British government asked the Imperial government (of Japan) for assistance under the terms of the Anglo-Japanese Alliance (1905). German men-of-war and armed vessels were prowling around the seas of eastern Asia, menacing our commerce and that of our Ally, while Kiaochow was carrying out operations apparently for the purpose of constituting a base for warlike operations in eastern Asia. Grave anxiety was thus felt for the maintenance of peace in the Far East. As all are aware, the agreement and Alliance between Japan and Great Britain has for its object the consolidation and maintenance of general peace in eastern Asia and the maintenance of the independence and integrity of China, as well as the principle of equal opportunities for commerce and industry for all nations in that country, and the maintenance and defense respectively of territorial rights and special interests of contracting parties in eastern Asia. . . . Germany's possession of a base for powerful activities in one corner of the Far East was not only a serious obstacle to the maintenance of permanent peace, but also threatened the immediate interests of the Japanese Empire. The Japanese government, therefore, resolved to comply with the British request, and, if necessary, to open hostilities against Germany."

In addition to her desire to fulfill her obligations as Great Britain's ally, Japan may also have been actuated by the lingering resentment which had been aroused by the Kaiser's references to the Yellow Peril, and by the part Germany had played in preventing Japan from retaining Port Arthur in 1895 after the Chino-Japanese War.

Four days after the declaration of war, the Japanese navy established a blockade of Tsingtao, and mine-sweepers began the dangerous work of clearing the surrounding waters of German mines. The only losses during the continuance of the blockade were one or two small vessels used as mine-sweepers and the cruiser *Takachiho*, which was torpedoed on October 19 and sank with 243 of her crew. The importance of this blockade can hardly be exaggerated, for it prevented the German cruisers already at Tsingtao from venturing out to prey on the valuable British sea-trade around Hongkong, and it deprived the swift German cruisers in the Pacific of their most important base. On September 2, Japan landed 10,000 troops outside the German leased territory on the Shantung peninsula. This landing, and the subsequent seizure of the Shantung Railway in the Chinese hinterland, constituted a plain violation of China's neutrality, and called forth vigorous protests both from Berlin and from Pekin. (See CHINA.) Japan replied that since the railway was owned by Germany, it was not neutral. A small British East Indian force (1360 men) under General Barnardiston arrived in September to coöperate with the Japanese landing party, which was raised to the strength of 21,000 men and 142 guns, under the command of General Kamio. On September 27, the Japanese, advancing on the Tsingtao fortifications, captured 50 men and four machine guns in the German trenches. Next day they began to plant siege guns on the heights near the town. Bombardment by two German cruisers and a sortie by the garrison, October 5, failed to dislodge the invaders. Prince Heinrich Hill, easily carried by assault, was crowned with Japanese guns which on the last day of October began the final bombardment with the aid of Japanese and British battleships. The German forts, powerful though they were, could not withstand the terrific fire. By November 6 the forts had been silenced and the word for an infantry assault was given by General Kamio. Early in the morning of November 7, the attacking party discovered that white flags had been hoisted in the city. The articles of capitulation were signed that evening, and on November 10 the governor, Meyer-Waldeck, formally handed over Kiaochow to Japan. In addition to the valuable naval base, Japan had captured 4000 German prisoners. The Japanese landing party had lost 236 killed and 1282 wounded; the British, 12 killed and 61 wounded.

GERMAN ISLANDS IN THE PACIFIC. Germany's island possessions in the Pacific Ocean, being entirely unprotected, fell an easy prey to Great Britain and Japan. German Samoa surrendered to an expeditionary force from the British colony of New Zealand, August 29. Australian troops occupied Herbertshohe, the seat of government for the German colonies of the Bismarck Archipelago and Solomon Islands, September 11, and captured Kaiser Wilhelmsland (the northeastern third of the large island of New Guinea), September 24–25. Jaluit, the most easterly of the German islands in the Caroline Archipelago, surrendered without offering resistance to Japanese marines on or before October 6. Japan, in announcing this exploit, carefully explained that the island was being occupied not permanently, but solely for military purposes. Yap, at the western end of the group, was taken a day later. By October 20, Japan had possessed herself of all the Marshall Islands, the Marianne Islands (Ladrones), and the East and West Caroline archipelagos. The German flag had vanished from the South Seas.

AFRICA. Since Germany could not reënforce her colonial garrisons, her colonies in Africa were left at the mercy of their French and British neighbors. Togo, the narrow German territory on the north of the Gulf of Guinea, was attacked by British warships on August 8, and surrendered to Anglo-French forces from Gold Coast and Dahomey, August 25. Kamerun, the large German colony north of the Congo River, was likewise conquered by combined British and French forces, late in September. German South West Africa was invaded, and Lüderitz Bay captured in September by forces from the Union of South Africa; but the outbreak of the Boer rebellion in the Union (see SOUTH AFRICA) necessitated the recall of the South African troops and enabled the Germans to coöperate with the rebels. German East Africa was the objective of several British attacks—it borders on two British colonies—but defended itself vigorously. (See GERMAN EAST AFRICA.) Nor were the Germans entirely on the defensive. From Southwest Africa they encouraged and assisted the rebel attacks on British South Africa, and sent German forces north to invade Portuguese Angola, if Portuguese accounts may be credited. Belgian Congo, too, was attacked. This fighting in the southern half of Africa was insignificant both with regard to the numbers engaged, and in respect of its result. The fate of Germany's African colonies depended not upon the success of raids from neighboring colonies, but on the outcome of the tremendous battles in Europe. In one way, however, the disturbances in Africa were an advantage to the Germans, inasmuch as the Allies were compelled to retain in Africa troops which might otherwise have been marshaled against the German armies in France. For this reason the German press was inclined to regard with complacency the civil war in British South Africa, the activity of the Moroccan tribesmen, and the incitement of the Mohammedans in Egypt to aid Turkey in the "Holy War."

V. NAVAL OPERATIONS

BRITISH SUPREMACY ON THE HIGH SEAS. Overawed by the enormous superiority of the mighty British navy, the main German fleets refused to venture out into the North Sea. British supremacy on the high seas was not seriously challenged. Two German cruisers left in the Mediterranean raced to shelter in the Dardanelles; a few of Germany's swifter ships for a time played havoc with British commerce in the Pacific, until hunted down by a British squadron; the Austro-Hungarian fleet was bottled up in the Adriatic; the Turkish fleet was barred from the Ægean; the German naval base of Tsingtao and the German coaling stations in the Pacific were captured. In short, Sir John Jellicoe's * British fleet in the Atlantic (or possibly in the North Sea) and the French fleet in the Mediterranean dominated the situation. The command of the seas so easily obtained was even more essential to Great Britain than it was injurious to Germany. Germany's merchant marine, for the time being, was swept from the seas. Great Britain captured 88 German merchant ships and detained 102; her allies captured 168; 54 (and 11 Austrian) lay in American ports, waiting until they could find purchasers or fly the American flag. The direct loss thus incurred by Germany must have been enormous; yet the indirect effects were even more grave, involving the partial inability of Germany to import food, copper, or munitions of war, or to market the products of her industry. But Germany could make her food supply last by strict economy; she had large supplies of most materials necessary for war, and the effectiveness of her army did not vitally depend upon control of the sea. For Great Britain, the loss of the seas would have spelled ruin. Her people would have been starved, her industries throttled, and her army prevented from engaging in the battles of France. The very fact that Germany is a large country combining agriculture and manufacture, surrounded by contiguous neutral countries, as contrasted with the insularity and almost complete industrialization of Great Britain, explains the secondary importance of naval power to Germany, and the primary importance of naval power to Great Britain.

The unexampled hatred which Great Britain had the misfortune to arouse in Germany was not altogether unconnected with British supremacy on the high seas. In the first place, the German manufacturer, the German workingman, and the German statesman alike resented the declaration by Great Britain of a "war on German trade" which threatened to deprive the manufacturer of his business, the workingman of his employment, and the statesman of his country's prosperity. In the second place, the control of the high seas by Great Britain made it very much more difficult for Germany to carry on the war successfully; it enabled Great Britain to scour the four quarters of the globe for military recruits, to bring black men from Africa, Asiatics from India, Malays, Canadians, and Australians, to fight against Germany in Europe; it made possible the future landing in France of a million British soldiers now being trained in England; it might entail bitter hardship on the German people through lack of sufficient food. In the third place, even should the German armies triumph, the British fleet would still stand between Germany and her dreams of world empire, for as long as the British fleet sailed the seas it would prevent Germany from becoming the greatest colonial and commercial Power, and would ensure to Great Britain the possession of the most valuable colonies in the world.

ESCAPE OF THE GOEBEN AND BRESLAU. At the outbreak of war one of Germany's most powerful and speedy battle cruisers, the *Goeben* (22,000 tons; 27.2 knots; 10 11-inch guns), and the light cruiser, *Breslau*, happened to be in the Mediterranean, where they might conceivably be able to interfere with the transportation of French troops from Algeria to France, but were much more likely to fall in with superior French or British naval units. British and French warships immediately gave chase to the two German cruisers, which, however, were fortunate enough to elude pursuit and to make port first in Messina and then at Constantinople. There they were allowed to remain, until purchased by Turkey (see above). With Turkish names, they later figured in the bombardment of Russian Black Sea ports, and minor naval engagements.

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* VICE-ADMIRAL SIR JOHN JELLICOE, born in 1859; entered navy, 1872; won a medal in the Egyptian War, 1882; served in China, 1898–1901; rear admiral, 1907; vice admiral and commander of the British Home Fleets, 1914. Sir John's position must not be confused with that of SIR JOHN ARBUTHNOT FISHER, first baron of Kilverstone (cr. 1909,) and Admiral of the Fleet, who was born in 1841; entered navy, 1854; served in the Crimean War (1855), Chinese War (1859–60), and Egyptian War (1882); Lord of the Admiralty, 1892–97; First Sea Lord, 1904–10.

EMDEN, KÖNIGSBERG, AND KARLSRUHE. Besides the *Goeben* and the *Breslau*, Germany had three fast cruisers and a Far East Squadron at large in the opening weeks of the war. The fate of the Far East Squadron is reserved for a subsequent section of this article; the story of the three cruisers, however, may well be told now. One of these, the *Emden*, commanded by the intrepid Capt. Karl von Muller, cruised the Indian Ocean and the South Pacific for three months, destroying 25 merchant vessels worth $10,000,000 without their cargoes, firing the oil tanks at Madras, sinking 4 British steamers in Rangoon harbor alone, and stealing into the harbor of Penang disguised by the addition of a false fourth smokestack, to sink the Russian cruiser, *Jemtchung*, and the French torpedo boat, *Mousquet*. The *Emden* was not a powerful ship. Her displacement was only 3600 tons, her speed less than 27 knots, and her largest guns only 4.1 inches. Again and again more powerful warships were on the *Emden's* trail, but each time she escaped, until one day Captain Muller decided to destroy the wireless station at Cocos Islands southwest of Java. There the *Emden* was discovered by the Australian cruiser, *Sydney*, and driven ashore in flames, by the 6-inch guns of the *Sydney*, on November 9, after a sharp battle. The career of the second German cruiser, the *Königsberg*, had come to an end a few days earlier, when after destroying about a dozen merchantmen the cruiser was caught hiding in shoal water up the Rufiji River, opposite Mafia Island, in German East Africa. The *Karlsruhe*, the third German raider, had 16 prizes to her credit and, at the close of the year, was still at large in the region of the West Indies.

AUGUST EVENTS AND THE BATTLE OFF HELIGOLAND. In the first month of the war a series of minor events were recorded, before Beatty's dash into the bight of Heligoland. On August 5 the *Königin Luise*, a German liner which had been converted into a mine-layer, was torpedoed by the British destroyer, *Lance*. On the following day, the British cruiser *Amphion* struck a German mine and went down with 131 men. An example of excellent marksmanship was given by the *Birmingham*, which destroyed the German *U-15* on August 9. On August 27 the British cruiser *Highflyer* sank the North German Lloyd liner *Kaiser Wilhelm der Grosse*, which had been armed as a commerce destroyer. These British successes were crowned by the Heligoland action. Sir David Beatty,* a promising aspirant for naval fame, led a British fleet, accompanied by a flotilla of torpedo boat destroyers, into the bight of Heligoland and engaged part of the German fleet almost under the guns of the German naval base. Three German armored cruisers and two destroyers were sunk in the battle on August 28, and 2500 German sailors were drowned.

BRITISH SEPTEMBER LOSSES. September brought disasters to the British. The armed steamer *Eyrion* and the gunboat *Speedy*, as well as the former White Star Liner *Oceanic*, were sunk by German mines. The British cruiser *Pegasus* and the French gunboat *Zelie* were destroyed by German cruisers in colonial ports. To offset these, the Germans had lost only the *Hela* and two converted cruisers. The climax was reached on September 22, when the German submarine *U-9*, having cruised several days out from the Kiel Canal, torpedoed three British cruisers within one hour, the *Aboukir*, the *Hogue*, and the *Cressy*. After making sure that all three ships were on their way to the bottom of the sea, Captain Weddigen turned the *U-9* homeward, and raced back to receive his Iron Cross from the Kaiser. On October 15 Captain Weddigen sank the British cruiser *Hawke*. On October 27 the British fleet sustained a still greater loss. The super-dreadnought *Audacious*, commissioned only two years previously, and ranking as one of the world's most formidable battleships, was sunk by mine or torpedo off the north coast of Ireland. Her crew, fortunately, were picked up by the liner *Olympic*, which happened to be near by. The British government, oddly enough, prevented the publication of news of this disaster, and allowed the British public to learn of it only after some time had elapsed, by reports and rumors from unofficial sources.

BATTLE OFF CHILE. All this time, the German Far East Squadron had eluded pursuit. On the evening of November 1 Admiral Cradock's * British squadron at last sighted the Germans off the coast of Chile (near Coronel). The German squadron of 5 cruisers was clearly more than a match for the 4 British ships. Against 8 8.2-inch guns on the German cruiser *Gneisenau* and 8 similar guns on the *Scharnhorst*, the British could avail themselves of only 2 9.2-inch guns on the *Good Hope* and a number of 6-inch guns. Altogether, the 3 British cruisers, *Good Hope*, *Monmouth*, and *Glasgow* (the armed transport *Otranto* hardly counted), mounted 2 9.2-inch guns, 34 6-inch guns, 10 4-inch guns, 21 12 pounders, and 10 3 pounders. The German cruisers *Gneisenau* and *Scharnhorst*, and the German light cruisers *Nürnburg*, *Leipzig*, and *Dresden* mounted 16 8.2-inch, 12 5.9-inch, 32 4.1-inch, 40 3.4-inch, and 12 2.1-inch guns. The Germans opened fire at 12,000 yards, with their 8-inch guns. The third salvo caused an outbreak of fire on the deck of the *Good Hope*, as also on the *Monmouth*. As the sun sank behind the horizon, and the heavy seas dashed against the bows of the British ships, the British gunners had increasing difficulty in training their guns on the German ships, and were unable to make any impression upon the up-to-date armor of the Germans. Fifty minutes after the first shot had been fired, the *Good Hope* blew up, shooting a column of fire 200 feet into the air. Shortly afterwards the *Monmouth* was dispatched. The *Glasgow* and the transport *Otranto* made off in time to escape destruction.

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* DAVID BEATTY, born 1871; served in the Sudan and in China; rear-admiral, 1910; commander of the First Battle Cruiser Squadron, 1912.

* REAR ADMIRAL SIR CHRISTOPHER CRADOCK, born 1862; served in the Sudan and in China; promoted captain for gallantry at Taku; rear admiral since 1910.

Battle off the Falkland Islands. The British had their revenge a little more than a month later. On December 8 a powerful British squadron, which had been sent out under the command of Vice Admiral Sir Frederick Sturdee[*] to search for Admiral von Spee's five German cruisers, sighted the *Scharnhorst*, the *Gneisenau*, the *Nürnberg*, and the *Dresden* off the Falkland Islands. According to the laconic statement of the British admiralty, "an action followed, in the course of which the *Scharnhorst*, flying the flag of Admiral Count von Spee, the *Gneisenau*, and the *Leipzig* were sunk. The *Dresden* and the *Nürnberg* made off during the action and are being pursued. Two colliers also were captured. The Vice Admiral reports that the British casualties are very few in number. Some survivors have been rescued from the *Gneisenau* and the *Leipzig*."

Coast Raids. Perhaps the most surprising feature of the naval war was the inability of the British fleet, despite its boasted superiority over the Germans, to prevent German warships from raiding the British coast with impunity. The Germans made their first attempt on November 3. Three swift battle cruisers, the *Seydlitz*, the *Moltke*, and the *Von Der Tann*,—the armored cruiser *Blücher*, the slower armored cruiser *Yorck*, and the protected cruisers *Kolberg*, *Graudenz*, and *Strassburg*, started off at full speed on the evening of November 2, with decks cleared for action, and all lights out. At dawn they hove into sight of the English seaport of Yarmouth, 280 miles from Heligoland, whence, presumably, the Germans had started. After bombarding the towns of Yarmouth and Lowestoft for about 20 minutes, the raiding squadron returned as swiftly as it had come. A British submarine—the *D-5*—attempting to pursue the Germans, struck a mine and sank, with all but two of her crew. The German cruiser *Yorck* also encountered a mine, and was lost with 300 men. A second German raid was made on December 16, against the British coast towns of Hartlepool, Scarborough, and Whitby. The raiding squadron was probably the same as that of November 3. Hartlepool, the only one of the three towns which could be called a fortified town, was inadequately defended by the destroyers *Doon* and *Hardy* and a shore battery. The German cruisers poured a perfect hail of shells into the town for about an hour, and then made off. The town itself was considerably damaged, and over 300 persons were wounded, 113 fatally. Scarborough suffered less severely, losing only 17 killed (including 8 women and 4 children) and some 50 wounded. Whitby, the third town to be bombarded, reported many houses damaged, but only 3 persons killed and 2 wounded. This second raid called forth angry protests from the English press, on the ground that the bombardment of unfortified towns, and the killing of unsuspecting civilians, was a needless barbarity and could serve no military purpose. But apparently the German government considered it almost as important to strike terror into the heart of the civilian as the soldier. No other object could be discerned in the frequent attacks made by German aviators on cities like Paris, Antwerp, and Dover. Bombs dropped from an aëroplane or from a Zeppelin might demolish an office-building or kill a few people, but they would hardly destroy fortifications. Germany's Zeppelins, by the way, were the subject of much speculation and grave anxiety in England, because many people feared that the huge airships might engage in systematic bomb-dropping, and possibly act in conjunction with the German fleet in a serious attack on the English coast.

VI. Neutral Nations

Italy. Italy, bound by the terms of the Triple Alliance to assist Germany and Austria-Hungary in case they should be attacked by other nations, would naturally have been expected to join with her allies in the war. When Germany, being "attacked" by France and Great Britain, called upon Italy for aid, Italy refused, on the ground that Germany and Austria-Hungary were engaged in an aggressive rather than a defensive war. While refusing to join Germany, Italy showed at first no disposition to espouse the cause of Germany's enemies. Grave industrial disorders, the unpreparedness of her army, and the uncertainty of the outcome, were a few of the factors making for Italian neutrality. Perhaps also the death of Pope Pius X may have strengthened the sentiment in favor of peace. (See Roman Catholic Church.) As the war progressed, however, and Germany failed to crush her antagonists, an ever-increasing current of popular opinion urged Italy to make common cause with Great Britain, France, and Russia, to attack her former allies, and to wrest from Austria-Hungary the "unredeemed" Italian districts of Trentino and Trieste. In December the distinguished German ex-Chancellor, Von Bülow, was sent to Rome, presumably charged with the delicate mission of making such diplomatic representations as would gain Italy's support for Germany, or at least prevent Italy from joining the Allies. In the same month, Premier Salandra, in a warmly chauvinistic speech, declared that at the proper moment, Italy would take energetic action to secure her national interests and aggrandizement. See Italy, *History;* also Albania.

United States. At the outbreak of war, the ambassadors of the United States were generally called upon to take over the functions of the ambassadors whose nations were at war. Thousands of tourists, stranded in Europe, besieged the American embassies in hope of obtaining emergency passports and cash for their return home—for the whole system of international credit seemed to have collapsed. While the stream of panic-stricken tourists was flowing westward across the Atlantic, another stream flowed back to Europe, made up of reservists of all nationalities. As one of the two Great Powers remaining neutral, the United States was in a position to offer its good offices, according to Article III of The Hague Convention, in the hope that even at the last moment the nations might reconcile their differences; President Wilson's offer of mediation, August 5, was courteously acknowledged, but not accepted. On September 8 the President set aside October 4 as a day of prayer for peace; but he did not renew his diplomatic efforts, as the hopelessness of mediation was only too obvious. Officially and unofficially the various belligerents appealed to public opinion in the United States to approve their actions. Not only were the "White Books" and "Yellow Books," and "Gray Books" widely circulated, but personal appeals were made to President Wilson by a Belgian delegation, which protested against German outrages; by the Kaiser, who denounced the Belgians; by President Poincaré, who denied that the French were using dum-dum bullets. The presence in America of a large number of German-Americans, whose sympathies were strongly enlisted on the side of Germany, tended to produce an acute conflict of popular sentiment, for the non-German population was generally favorable to the Allies. In the press and on the platform the merits of the case were argued. President Wilson's proclamation of August 18, urging all citizens to refrain from violent expressions of sympathy in public, whether for or against Germany, moderated but did not end the debate. The war also exercised a profound influence upon the economic life of the nation. On July 31, the day Russia mobilized, the New York Stock Exchange closed its doors for the first time since 1873. In spite of the financial stringency, J. P. Morgan and Company were prepared to loan $100,000,000 to France, but desisted, in deference to the announcement by Secretary Bryan that the administration would not view with favor the extension of loans to the belligerent nations. After the first few days of war, the financial condition of the country rapidly recovered, although the cotton growers of the South found themselves unable to market their product, and although new taxes—"war taxes"—were necessitated by the falling off of the customs revenue. War orders for millions of army blankets, for motor trucks, for steel, and for countless other commodities helped to improve the situation. The question of American shipping is treated in the article on the UNITED STATES.

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[*] Frederick Charles Doveton Sturdee, born 1859; entered navy, 1871; served in Egyptian War, 1882; captain, 1899; commander of the Second Cruiser Squadron, 1912.

OTHER NEUTRAL NATIONS. The general effect of the war upon neutral nations was, at first, to cause a financial stringency, which was usually met by a moratorium, and, later, to impose additional burdens upon the tax-payers, by reason of the decline of customs revenues, and in some countries, the necessity of extraordinary military expenditure. The Netherlands, for instance, being situated on the northern boundary of Belgium, was compelled to introduce a régime of martial law, to establish patrols on her frontiers, and to mine the mouth of the Scheldt, in order to preserve her neutrality. Portugal was not really neutral, as her treaty of alliance with Great Britain bound her to furnish a contingent of troops to aid Great Britain if necessary; the Portuguese government repeatedly affirmed its intention to fulfill this treaty obligation, but no reliable information could be obtained regarding the military measures actually taken. Rumania, especially after the death of King Charles, October 10, was strongly inclined to abandon her neutrality, and to conquer the Rumanian regions of Bukovina and Transylvania from Austria-Hungary. Rumania, however, remained neutral, as did Greece and Bulgaria. The latter State, being under financial obligations to Germany, was looked upon as a possible ally of Austria-Hungary, Germany, and Turkey. Spain, it was rumored, refused to listen to a German suggestion that by making war upon France all Morocco could be gained. Sweden, intent upon preserving her neutrality, conferred with Denmark and Norway at the important Malmoe Conference, December 18–19 (see SWEDEN). Switzerland was forced to mobilize her army to make sure that neither German nor French armies should violate Swiss territory. Two South American nations—Ecuador and Colombia—were complained against by Great Britain in November, as it was alleged that wireless stations on their soil were flashing information to the German fleet of Admiral von Spee. Both States denied the charges; but later reports pointed to the discovery of German wireless stations at Cartagena (Colombia) and at Callao (Peru). Argentina on December 22 protested against the British use of the Falkland Islands near her coast for naval purposes. Venezuela at the very end of the year put forward a proposal for a conference of neutral nations at Washington to discuss the rights of neutral Powers. In Asia, the neutral nation of China again furnished, as it had in 1904–05, the theatre of military operations for Japanese troops. The Japanese landing party which besieged Kiaochow did not hesitate to trespass on Chinese territory outside of the German concession, despite China's protests. For further information regarding neutral nations, see articles on CHINA, GREECE, RUMANIA, etc.

For detailed information respecting the internal affairs, the military establishment, and the naval strength, of the belligerent Powers, consult articles on FRANCE, GERMANY, GREAT BRITAIN, RUSSIA, etc., under sections *History*, *Army*, and *Navy;* see also article on MILITARY PROGRESS. For maps see AUSTRIA-HUNGARY, BELGIUM, FRANCE, GERMANY, and RUSSIA. The pacificist endeavors of the Pope are discussed in the article ROMAN CATHOLIC CHURCH. The attitude of the Socialists toward the war is treated under SOCIALISM. See also FRENCH LITERATURE, *During the War;* GERMAN LITERATURE; INTERNATIONAL ARBITRATION AND PEACE, *passim*, LITERATURE, ENGLISH AND AMERICAN, *War Literature*, and *Poetry;* and RELIEF FOR WAR VICTIMS.

WAR REVENUE BILL. See UNITED STATES, sections *Congress* and *Financial Revenue.*

WARSAW, GERMAN ADVANCES ON AND RETREATS FROM. See WAR OF THE NATIONS.

WASHBURN, FRANCIS. An American clergyman and writer, died Dec. 5, 1914. He was born in New York, in 1843, and was privately educated. In 1874 he was licensed priest, and for four years served as secretary of the New York District Conference of the Methodist Episcopal Church. Shortly after, he began to study for orders in the Protestant Episcopal Church and was ordained priest in 1880, serving as rector in several parishes in New York State until 1892, when he retired from active church work. He was a prolific writer, and among his published works are: *Soul Thirst* (1879); *Thoughts on the Lord's Prayer* (1883); *Meditations on Charity* (1887); and *Imperilled Faith* (1899). He also contributed verse and prose to religious and secular journals.

WASHINGTON. POPULATION. The estimated population on July 1, 1914, was 1,407,865. The population in 1910 was 1,141,990.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	36,000	972,000	$710,000
	1913	34,000	952,000	762,000
Wheat	1914	1,780,000	41,840,000	41,840,000
	1913	2,300,000	53,800,000	38,909,000
Oats	1914	297,000	13,959,000	5,863,000
	1913	300,000	14,250,000	5,700,000
Barley	1914	182,000	7,098,000	3,691,000
	1913	180,000	7,290,000	3,791,000
Potatoes	1914	59,000	7,552,000	4,154,000
	1913	60,000	7,380,000	4,428,000
Hay	1914	796,000	*a* 1,751,000	19,261,000
	1913	780,000	1,794,000	19,555,000

a Tons.

MINERAL PRODUCTION. The total value of the metal mine output of Washington in 1913 was slightly more than $1,000,000, a decrease of 6 per cent from the value of 1912. This was due in part to the decreases in the silver and copper production, and in part to the somewhat lower metal prices. There was an increase of 2 per cent in the gold output, valued at $694,000. There was a decrease in the silver yield of about 21 per cent, from 413,538 ounces in 1912, to about 326,000 ounces in 1913. The silver output was evenly divided between the siliceous ores and copper ore. The copper output decreased about 9 per cent, from 1,086,010 pounds in 1912, to about 976,000 pounds in 1913. No zinc ore was shipped from the State in 1913, but there were shipments of lead ore from Stevens County to the amount of nearly 300,000 pounds, as compared with 127,387 in 1912. The total value of gold, silver, copper, and lead mines in 1913 was 3,877,891 short tons, valued at $9,243,137, a substantial increase over the output of 1912, amounting to 516,959 short tons. The quantity of coal made into coke increased from 76,741 tons in 1912, to 118,698 tons in 1913. There were 5794 coal miners in the State in 1913. The production of coal in 1914, according to the estimates of the United States Geological Survey, was between 20 and 30 per cent less than in 1913. This was due chiefly to the increased use of fuel oil in manufactures and by railroads. The total value of the mineral products of the State increased from $15,347,313 in 1912, to $17,579,743 in 1913.

The value of the mine output of gold, silver, copper, and lead in the State in 1914 was less than $800,000, a decrease of over 24 per cent. Gold decreased from $696,275 in 1913, to $558,000 in 1914, or nearly 20 per cent. The silver output decreased from 331,239 ounces in 1913, to 253,000 ounces in 1914, or over 23 per cent. The copper output decreased from 954,081 pounds in 1913, to 737,500 pounds in 1914.

TRANSPORTATION. The total railway mileage of the State on June 30, 1913, was 8830. The railroads having the longest mileage are the Northern Pacific, 2738; the Great Northern, 1391; the Oregon-Washington Railroad and Navigation Company, 1199; Chicago, Milwaukee, and St. Paul, 807; Spokane, Portland, and Seattle, 548.

EDUCATION. The total school population in 1914 was 296,695. There were enrolled in the public schools 238,663, the average daily attendance being 180,225. There were 6928 female, and 1711 male teachers, and the average monthly salary of male teachers was $105, and of female teachers $83.

FINANCE. The report of the State Treasurer for the biennial period, 1912–14, shows a balance on hand on Oct. 1, 1912, of $149,266. The total receipts for the year were $7,215,698, and the disbursements for the same period amounted to $6,614,308, leaving the cash on hand on Sept. 30, 1914, $750,656. The funded debt of the State on Sept. 30, 1912, consisted of $125,000 of State highway bonds, and $206,024 of normal school series bonds. The per capita debt was $1.21.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State, under the supervision of the State Board of Control, are as follows: State School for the Deaf, and State School for the Blind, at Vancouver: State Training School, at Chehalis; State Soldiers' Home, at Orting; Washington Veterans' Home, at Port Orchard; Western Hospital for the Insane, at Fort Stellacoom; Eastern Hospital for the Insane, at Medical Lake; Northern Hospital for the Insane, at Sedro Wooley; State Penitentiary, at Walla Walla; State Institution for Feeble-Minded, at Medical Lake; and State Reformatories, at Seattle, Tacoma, Olympia, Everett, and Monroe.

POLITICS AND GOVERNMENT. The State Legislature had no meeting in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for United States Senator, and for representatives in Congress. Senator Jones, whose term expired in 1915, was a candidate for reëlection, and was opposed by Democratic, Progressive, Socialist, and Prohibition candidates. In the election of November 3, Senator Jones received 130,479 votes; Black, Democrat, 91,733; Hanson, Progressive, 83,282; and Barth, Socialist, 30,234, the total number of votes cast being 345,279, compared with 322,799 at the presidential election of 1912. The Republicans showed an increase of about 60,000 votes, the Democrats an increase of about 5000, the Progressives a loss of about 30,000, and the Socialists a loss of about 10,000. Republicans were elected in all five Congressional districts. At an election in Seattle, on March 3, Hiram C. Gill, once recalled as mayor of that city, was again chosen mayor in a nonpartisan election. A measure providing for State-wide prohibition was carried at the election in November.

STATE GOVERNMENT, 1915. Governor, Ernest Lister; Lieutenant-Governor, Louis F. Hart; Secretary of State, I. M. Howell; Treasurer, Edward Meath; Auditor, C. W. Clausen; Superintendent of Education, —— ——; Attorney-General, W. V. Tanner—all Republicans except Governor, who is a Democrat.

JUDICIARY. Supreme Court: Chief Justice, H. D. Crow; Associate Justices, O. G. Ellis, M. A. Fullerton, W. Mount, M. F. Gose, S. J. Chadwick, George E. Morris, Emmett N. Parker, and J. F. Main—all Republicans except Chadwick and Ellis; Clerk, C. S. Reinhart.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	28	77	105
Democrats	6	13	19
Progressives	7	7	14
Republican majority	15	57	72

The representatives in Congress will be found in the article UNITED STATES, section *Congress*.

WASHINGTON, UNIVERSITY OF. A State institution for higher education, founded at Seattle, Wash., in 1861. The students enrolled in the several departments in the autumn of 1914 numbered 2888; of these, 1315 were in the

College of Liberal Arts, 425 in the College of Science, 472 in the College of Engineering, 185 in the School of Law, and 148 in the Graduate School, the remainder being in the Schools of Forestry, Mines, Pharmacy, Fine Arts, and Education. The faculty numbered 194. During the year William Franklin Allison was appointed professor of highway and municipal engineering, to fill the place made vacant by the resignation of Prof. C. E. McCaustland. The university is supported by appropriations from the State, and the appropriation from 1913 to 1915 amounted to $1,001,200, or $500,600 per year. The library contains 64,000 volumes. The acting president is Henry Landes.

WASHINGTON AND LEE UNIVERSITY. A university for higher education, founded at Lexington, Va., in 1749. The total enrollment in the autumn of 1914 was 492, of whom 346 were in the academic and scientific department, and 146 in the law department. The faculty numbered 26. During the year Dr. Franklin L. Riley, of the University of Mississippi, became professor of history, filling the vacancy caused by the election of Dr. J. H. Latane to the professorship of American history at Johns Hopkins University; Dr. Edgar E. Shannon, professor of English and dean at the University of Arkansas, succeeded Dr. W. S. Currell as professor of English, Dr. Currell resigning to accept the presidency of the University of South Carolina; Mr. William H. Moreland became professor of English, succeeding Mr. M. P. Burks, who was appointed on a committee to revise the Virginia code of laws; and Dr. H. B. Schermerhorn was elected professor of law to fill the vacancy caused by the death of Prof. Abram P. Staples. No noteworthy benefactions were received during the year. The productive funds of the university amounted, on April 30, 1914, to $878,049. The annual income is $101,271. The library contains approximately 50,000 volumes. The president is Henry Louis Smith, Ph.D.

WASHINGTON UNIVERSITY. An institution for higher education, founded in 1853, at St. Louis, Mo. The students enrolled in all departments of the university in the autumn of 1914 were 1390, and the faculty numbered 206. There were no notable changes in the faculty during the year, and no noteworthy benefactions were received. The productive funds amounted to $6,156,223, and the total income to $479,791. The library contained 142,589 bound volumes, and 60,000 pamphlets. The president of the university is David S. Houston.

WATER POWER. See ELECTRIC POWER, TRANSMISSION OF.

WATER PURIFICATION. The rapid growth of water purification plants in number and size during the previous 5 or 10 years, and good promise of later growth bid fair to put the United States on a par with Great Britain and Germany, where the use of surface waters without treatment was unusual. Most of the newer American filter plants were of the mechanical or rapid, instead of the slow sand type. Chlorine disinfection of all surface waters suspected of being polluted with sewage was becoming the rule, even where the water was filtered. Liquid chlorine (compressed chlorine gas) was displacing hypochlorite of lime (calcium chloride or bleaching powder). The liquid chlorine is far less bulky, is easier to handle, the dosing apparatus is far more compact, and automatic regulation of the supply is more readily secured. Water softening plants, which, until recently, were few and far between in the United States, although common enough in Europe, were being installed by a number of American cities, the most notable example being Cleveland, Ohio, which was building a 150,000,000-gallon large water softening and filtration plant. Large water purification plants were also being built in 1914 by Baltimore and St. Louis, and a contract was awarded by Toronto, Ont., for a "drifting sand" type of mechanical filter, but recently introduced in England, and not yet tried practically by an American city.

Unique studies to determine the best means of removing iron and manganese from underground waters had been made, and plants installed for several Massachusetts cities. In the latter part of 1914, contracts for such a plant were let by Lowell, Mass. The plant was to have a nominal capacity of 100,000,000 gallons a day. The water was first to be passed through 6 coke prefilters, 10 feet deep, with a total area of 0.4 acre, operated as control beds. It would then go to a 500,000-gallon settling basin, in 2 units, and next to 6 sand filters having a total area of 1 acre. The filtered water would pass to a 1,000,000-gallon reservoir. The estimated cost of treating the water by this method was $7.65 per 1,000,000 gallons, including capital charges. A few iron-removal plants have been in use in America for a decade or two, but it is only recently that manganese has been recognized as a source of trouble in well waters.

A board of sanitary experts, appointed by the International Joint Commission (see SEWAGE PURIFICATION), reported during the year a tentative standard of permissible sewage-pollution burden on water-purification plants located on the Great Lakes. The safe burden would be exceeded if the average number of B. Coli in the water delivered to a filtration plant during a year exceeds 500 per cubic centimeter, or if B. Coli is found 50 per cent of the time in 0.1 cubic centimeter samples. Extended discussions of water purification appeared during the year in the *Journal of the American Water Works Association* (New York). Water purification is considered in Rideal's *Water Supplies* (London and New York).

WATER STERILIZATION. See CHEMISTRY, INDUSTRIAL.

WATER-SUPPLY. See AQUEDUCTS.

WATER-WORKS. Besides work on the Catskill Aqueduct for the additional water-supply of New York City, which was nearing completion, work supplementary to the Los Angeles Aqueduct, a lengthy supply line for Winnipeg, Manitoba, new water-works intake tunnels at Chicago, Cleveland, Milwaukee, and St. Louis, and numerous large water purification plants, much smaller work was going on all over the United States and Canada. Bids were being asked at the close of the year for water-supply and sewerage concessions for Athens, and the Piræus, Greece. A large and unique water-works system was under construction in southeastern Italy with 10,000 men employed since October, 1906. Some 3,000,000 people in the cities and towns of the provinces of Foggia, Bari, and Lecce, comprising the former Duchy of Apulia or Puglia, were to be supplied from springs at the source of the river Sele through an aqueduct with a capacity of 150,000,000 gallons a day, and a network of cast-iron pipe. The aqueduct will be 60 miles long, mostly in tunnel, and the aqueduct and pipes together will have a length of 1900 miles. About 400 Venturi meters will control the supply to the various branch lines, and the supply to each private consumer will also be metered. The head of the aqueduct will be used to develop water power and hydroelectric power to pump water to many towns and cities located 200 to 700 feet above the main conduit, and where such power is not available, Diesel oil engines will be used. The works were being built by the Società anomia Italiana Concessionaria dell' Acquedotta Pugliese-Genova, which will receive 124,000,000 lire ($24,800,000) from the Italian government. The project was to cost much more than that, but the company was to have the entire earnings from the works for 90 years after their construction. See also AQUEDUCTS, MUNICIPAL OWNERSHIP, WATER PURIFICATION.

WATSON, EUGENE WINSLOW. A rear admiral (retired) of the United States Navy, died Dec. 12, 1914. He was born in Northampton, Mass., in 1843, and was educated in Philadelphia. He joined the navy as master's mate in 1859 and during the Civil War saw service on several vessels. He is said to have been the last surviving officer who saw the *Monitor* sinking in a gale off Hatteras nine months after her famous engagement with the *Merrimac*. After the war he was commissioned an ensign in the regular navy and was promoted through various grades to be captain in 1899. At the beginning of the war with Spain he was commandant of the naval station at New London and was then placed in command of the *Scindia*. In 1902, being at that time in charge of the navy yard at Norfolk, Va., he was retired at his own request.

WEATHER BUREAU. See METEOROLOGY.

WEIGHTS AND MEASURES. In the republic of China the metric system, through the presidential decree of March 31, 1914, made a slight advance over the conditions established by the law of July 29, 1908. The first article of this decree provided that the standards of weights and measures would be based on the international meter and kilogram of the International Bureau; the second article provided that weights and measures should be classed in two categories. First, a system based on the foot of the Public Works Service, and the taël of the balance of the treasury. The foot of the Public Works Service was defined as $^{32}/_{100}$ of the meter standard measured between 0 and 100, at the temperature of 0 degrees on the Centigrade thermometer; while the taël of the Bank of the Treasury was equal to $^{37,301}/_{100,000}$ of the weight of the kilogram standard. Second, the International System of Weights and Measures in common use was also adopted, where the unit of length is the meter, and the unit of weight is the kilogram, the meter representing the entire length of the metrical standard between 0 and 100 at a temperature of 0 degrees on the Centigrade thermometer, and the kilogram representing the weight of the standard kilogram.

In the United States considerable progress was made towards securing greater accuracy and harmony of weights and measures, and weighing methods. Various State Legislatures had the matter under advisement, and the different bureaus and officials prosecuted their investigations and enforced their laws in many cases effectively. The success of the special track inspection car of the United States Bureau of Standards led to a decision to duplicate it, and plans were prepared for a second car during the year, and others were to be added in the future. Track scale inspection as carried on by the United States government found a number of inaccurate scales, and the standard of scales was being constantly raised by railway companies and the scale-makers. See articles on "Railway Track and Weighing Methods" in *Engineering Magazine* (New York), May and June, 1914.

During the year there was installed in the basement of the city hall in Chicago a 100-foot heavy standard, presented to the city by the Western Society of Engineers. This bar is 2 x ½ inches in cross section, 102 feet in length, and was made in 6 pieces, which were welded together in place by the oxy-hydrogen flame. It rests on rollers, secured to brackets 42 inches apart, which are so attached to the wall as to permit the bar being adjusted to a vertical plane. The bar is to be used for the standardizing of tapes and other measures of length, and after it was set and leveled, small plates of an alloy of 90 per cent platinum, and 10 per cent iridium, ⅝ of an inch in diameter, were inserted, flush with its top surface at each point where a graduation mark was to be placed: at 0, 1 foot, 1 yard, 1 meter, 10 feet, 25 feet, 50 feet, 66 feet, 20 meters, 30 meters, and 100 feet. At the 0 end of the rod there was provided a clamp for holding the end of a tape line to be tested, and at the opposite end a spring press. The rod was graduated in October, 1913, by L. A. Fischer, Chief of the Division of Weights and Measures of the United States Bureau of Standards, and was officially accepted by an ordinance of the City Council of Chicago on March 20, 1914.

There was before Congress, in 1914, a bill requiring a standard barrel for fruit, vegetables, and other dry commodities, and providing the following dimensions for such a barrel: a length of stave, 28½ inches, diameter of heads 17⅛ inches, distance between heads 26 inches, circumference of barrel, 64 inches. Any barrel of different form having a capacity of 7056 cubic inches was to be termed a standard barrel, while a special barrel of other dimensions was made standard for cranberries. This bill was discussed and opposed by the advocates of State's rights on the ground that individual States should describe their own standard barrel.

WEIHAIWEI. A British leasehold on the north coast of the Shantung Peninsula, leased by China to Great Britain, July 1, 1898. The leased area includes the island of Liukung, all the islands in the bay of Weihaiwei, and a strip of mainland 10 miles wide along the entire coast of the bay. Total area, 285 square miles; population 1911, 147,177. The Commissioner (Sir J. H. Stewart Lockhart, in 1914) resides at Port Edward.

WELFARE WORK. See SOCIAL ECONOMICS and SOCIAL INSURANCE.

WELLESLEY COLLEGE. An institution for the higher education of women, founded in 1875, at Wellesley, Mass. The total number of students in all departments in 1914 was 1452, and there were 140 members in the faculty. There were no notable changes in the faculty during the year. The amount received in gifts and bequests amounted to $172,257. The productive funds amounted to $2,056,226, and the annual income from funds to $69,548. The library contains 80,000 volumes. On May 12, 1914, the main building of the college was destroyed by fire, and a campaign was carried on during the year for the collection of funds to erect a new building. The dean of the college is Ellen F. Pendleton.

WELSH, Charles. An American author and literary critic, died Sept. 12, 1914. He was born at Ramsgate, Kent, England, in 1850, and was educated in the national schools at Ashford, Kent, afterwards studying at the Society of Arts and at the Mechanics' Institute. In 1868 he became a reporter on a trade journal in London and was employed in various capacities with publishing houses and newspapers in that city until 1895, when he removed to the United States and became business manager and assistant editor of *The Art Amateur*. He was an authority on domestic science and juvenile literature, and gave lectures and readings on that and other literary subjects. From 1909 to 1912 he was principal of the School of Domestic Science for the International Correspondence Schools, and from 1912 until his death was editor for the World Book Company. His published works include: *Publishing a Book* (1900); *Automobilia* (1905); *Love's Garland* (1905). He compiled and edited many works including several series for young people. These include: *The Uncle Charlie Series of Pleasure Books for the Young*, and *The Young Folks Library* (with T. B. Aldrich, 20 vols., 1901); *The Right Reading for Children* (1902); *Heath's Home and School Classics* (50 vols., 1900–03). He also edited: *Irish Literature* (with Justin McCarthy, 10 vols., 1904); *The Golden Treasury of Irish Songs and Lyrics* (1907); *The Works of Henry W. Longfellow* (1909); *The World's Great Books, Great Plays, and Great Men and Women* (1911); *Stories of Adventure Children Love* (1912); *Stories of Americans Children Love* (1913). He contributed to many magazines on history and literature for children, and other literary and educational topics.

WEMYSS, Francois Charteris, tenth Earl of. An English nobleman, died June 30, 1914. He was born in 1818 and succeeded his father to the title in 1883. He was educated at Eton and at Christ Church, Cambridge. From 1841 to 1883, as Lord Elcho, he was a member of Parliament, and from 1852 to 1855 he was Lord of the Treasury. He published *The New War Office* in 1899.

WERNZ, Francis Xavier, twenty-ninth General of the Society of Jesus, died Aug. 20, 1914. Born Dec. 4, 1842, at Rottweil, Württemburg, Germany, he entered the Jesuit order the day after he completed his fifteenth year. He made the usual course of study of the Society and was ordained priest in 1871. Soon after, the Jesuits were banished by Bismarck from Germany. Wernz was sent to England where from 1876 to 1883 he taught science and canon law at Ditton Hall near Liverpool and at St. Beuno's College, North-Wales. In 1883 he was appointed to the chair of canon law in Gregorian University, Rome, and on Sept. 8, 1904, became the rector of that institution. His five volumes explaining and illustrating the law of the Church are regarded as the standards on the study of canon law and second only to the great treatises of Benedict XIV. At the General Congregation of the Society in September, 1906, to elect a successor to the deceased General Father Martin, he was one of the three delegates from Germany, and on September 8th was elected on the third ballot to the vacant generalship. He was a methodical organizer and during his term of office promoted the New Orleans, California, and Canadian "Missions" of the Society to the dignity of "Provinces," making five in all for the North American continent. He was an important figure in Rome, where he resided at the German College, being a member or consultor of a number of the curial congregations and commissions. As the rule of the Society requires, his official testament designated as his successor to govern the Society until the election of the new general, the Rev. Edmund Fine, the French "Assistant" to the General.

WESLEYAN METHODIST CONNECTION OF AMERICA. This denomination was founded in 1843 as a protest against the institution of slavery. To this communion soon came a great number of persons from the Methodist Episcopal and other churches, who were dissatisfied with the attitude of their respective churches upon this question. General dissatisfaction with the Episcopal form of government led, in the organization of the new church, to the adoption of a constitution based somewhat upon that of the Federal government, so that it was often called in the early years of its history, the Congregational Methodist Church.

After the close of the war many, who felt that the purpose for which the new church had been organized had been accomplished, reunited with the larger churches, but a considerable body adhered to the new organization, which became the nucleus of an aggressive reform body which has been successfully maintained to the present time. Separation from all worldly and sinful alliances on the part of Christian people, and the advocacy of the Wesleyan doctrines of justification and holiness as essential to salvation, occupy a prominent place in the thought and work of the church, as well as work for the adoption of other needed reforms, such as the prohibition of the liquor traffic.

Evangelistic work in America and missionary work in India and Africa are successfully prosecuted, with the result that the membership is steadily increasing. In 1914 there were about 20,000 members, and 840 ministers. Sunday School work is receiving increased attention and the number of schools has materially increased during the past few years.

Three schools of college grade are maintained —at Houghton, N. Y., Miltonvale, Kan., and Central, S. C. Besides these there is maintained a successful theological school at Fairmount, Ind., and a very flourishing school for colored people in Alabama. The next meeting of the General Conference of the denomination will be held in June of 1915, in Houghton, New York.

WESLEYAN UNIVERSITY. An institution for higher education, founded at Middletown, Conn., in 1831. The number of students in the autumn of 1914 was 460, and the faculty numbered 42. During the year Frederick Slocum, Ph.D., was elected professor of astronomy. The college is building a new observatory, largely the gift of the late Professor John Monroe Van Vleck, a former member of the faculty, for whom the building is to be named. The productive funds at the end of the collegiate year amounted to $2,167,194, and the income to $168,649. The library contains about 100,000 volumes. The president is William K. Shanklin, D.D.

WEST, William Stanley. An American public official, former United States Senator from Georgia, died Dec. 22, 1914. He was born in Marion Co., Ga., in 1849, graduated from Mercer University in 1880, and after studying law began practice at Valdosta in 1883. He was also a planter, and president and general manager of the Valdosta Street Railway Company. From 1892 to 1901 he was a member of the Georgia House of Representatives, in the four years succeeding was a member of the State Senate, and in 1906 he was elected delegate-at-large to the Democratic National Convention at Denver. He was appointed in March, 1914, to fill the vacancy in the United States Senate caused by the death of Augustus O. Bacon (q.v.), which term expired in November, 1914. Senator West was chairman of the Board of the Southern Georgia State Normal College and a trustee of the University of Georgia.

WESTERN AUSTRALIA. A State of the commonwealth of Australia. It is the largest of the states, having an estimated area of 975,920 square miles. The census of April 3, 1911, returned a population of 282,114, exclusive of full-blooded aboriginals; estimate of Dec. 31, 1912, 306,129. The capital is Perth, whose population, with suburbs, in 1911, was 106,792. The Governor, in 1914, was Maj.-Gen. Sir Harry Barron (from March, 1913). Premier, John Scadden. See Australia.

The elections which were held in May, 1914, to replace one-third of the Legislative Council, resulted in the loss of 1 seat by the Labor party and the acquisition of 2 by the Country party. A short and unimportant session of the Parliament was terminated on July 1, preparatory to the general elections which were called for October 21. In defending the policies pursued by the government of which he is a member, Mr. Thomas Walker (attorney-general and minister of education) declared: "I believe we are really in advance of any State in providing homes for workers by easy methods. The chief criticism against our government is leveled at the State steamships, but there is no difference in principle between a line of iron and a line on the ocean. We have succeeded in attaining some of the objects for which this line of ships was established, but I am free to confess that one of the ships was not a good bargain. . . . The State butcher's shop has paid from the beginning, and our three or four State hotels are flourishing. . . . The State sawmills have started operations. . . . The State brick-kilns are on their way, while our State dairying enterprise, from which we distribute the milk, has been responsible for saving the lives of many of the infants in the children's hospitals."

WESTERN RESERVE UNIVERSITY. An institution for higher education, founded at Cleveland, Ohio, in 1826. The total enrollment in all departments in the autumn of 1914 was about 1300, and the faculty numbered 234. There were no notable changes in the faculty during the year. During 1914 was completed the payment of subscriptions of an additional $1,000,000 endowment for the funds of the School of Medicine. The productive funds of the university amount to about $5,212,000, and the annual income to about $260,000. The Flora Stone Mather House, a dormitory for women, to cost $80,000, was under construction in 1914. The library contains about 110,000 volumes. The president is Charles E. Thwing, D.D.

WESTINGHOUSE, George. An American inventor and financier, died March 14, 1914. He was born at Central Bridge, Schoharie Co., N. Y., in 1846, and was educated in common and high schools, and at Union College which he attended for three years. His father, also named George, was the inventor and maker of farming implements. At the age of 17 young George Westinghouse joined the Twenty-sixth United States Cavalry, but his taste for engineering led to his transfer to the navy, where he was attached to the Potomac flotilla with which he acted as third assistant engineer until the end of the war.

Then returning to his father's shop in Schenectady, he soon invented a device for rerailing steam cars. He next became interested in the invention of a brake for railways cars, first trying steam but without success; then chancing to read of air power, he experimented with that means for applying his brake. While working on this invention he quarreled with two men who were working with him and removed to Pittsburgh. The device which he invented was patented when Westinghouse was 21 years old. At first he had difficulty in impressing railroad officers with the value of this invention, but its use became general and its adoption is now made compulsory in the United States by act of Congress. After the perfection of the air-brake, Mr. Westinghouse turned his attention to the development of a device for transporting natural gas, and although his efforts were ridiculed by engineers, they were finally successful. He became interested in the alternating electric current and found that by its use power could be transmitted to a much greater distance than with the ordinary current. The value of this discovery was proved at the World's Fair in Chicago, where he obtained the electric lighting contract at a price $1,000,000 lower than any other bidder. Mr. Westinghouse afterwards became interested in the development of electrical machinery of various sorts and made many electrical inventions. He furnished funds to Nicola Tesla, which enabled the latter to develop the induction motor which made possible the utilization of alternating current for power purposes. He built the first 10 great dynamos for the great hydroelectric plants at Niagara Falls, and also the dynamos for the elevated and subway railways in New York, and for the Metropolitan Railway in London. He took a foremost part in developing gas engines, and in adapting steam turbines to electric generation. Mr. Westinghouse possessed not only the gift of developing inventions that were essential to the prosperity of the country, but he had also the faculty of organizing companies, gathering about him men of ability, and obtaining their loyal services. He established works at Wilmerding, Pittsburgh, Swissvale, and Trafford City, Pa.; Hamilton, Canada; Manchester and

London, England; Havre, France; Hanover, Germany; St. Petersburg, Russia; Vienna, Austria; and Vado, Italy. These industries represent an investment of more than $200,000,000, and give employment to 50,000 men. Mr. Westinghouse was a tireless worker and he had in connection with his Pittsburgh plant, a private laboratory where much of his time was spent and where he kept 40 or 50 men at research work. After the panic of 1907 the Westinghouse Electric and Manufacturing Company, the name under which his industries were conducted, went into the hands of receivers, but Mr. Westinghouse fought for the reorganization of the company on his own plan and was successful. During the last years of his life he withdrew gradually from the various companies and placed greater responsibilities on his associates.

Experts in the industrial development of the United States have placed Mr. Westinghouse among the seven or eight men to whom credit must be given for the commercial advance of the country. Lord Kelvin said of him: "George Westinghouse is, in character and achievement, one of the great men of our time." He was decorated with the Legion of Honor of France, and received decorations also from the King of Italy and the King of Belgium.

WEST VIRGINIA. POPULATION. The estimated population on July 1, 1914, was 1,332,910. The population, in 1910, was 1,221,119.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	732,000	22,692,000	$18,834,000
	1913	732,000	22,692,000	18,154,000
Wheat	1914	236,000	3,540,000	3,823,000
	1913	235,000	3,055,000	3,055,000
Oats	1914	105,000	2,100,000	1,155,000
	1913	115,000	2,760,000	1,408,000
Rye	1914	17,000	246,000	221,000
	1913	17,000	230,000	200,000
Potatoes	1914	48,000	2,592,000	2,100,000
	1913	48,000	3,984,000	3,586,000
Hay	1914	696,000	*a* 640,000	11,008,000
	1913	740,000	925,000	13,782,000
Tobacco	1914	10,800	*b* 8,856,000	974,000
	1913	15,000	10,200,000	1,224,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. With a production in 1913 exceeding for the first time in its history a total of 70,000,000 tons, West Virginia became firmly established as the second in rank among the coal-producing States. The total production was 71,308,982 tons, or an increase of 4,522,295 short tons over the output of 1912. The increased production was accompanied by a considerably larger gain in value, which showed an increase over 1912 of $9,079,931, or 14.46 per cent, the value of the output in 1914 being $71,872,165. The production increased in 1913 in spite of labor troubles in the Paint Creek and Cabin Creek districts of the Kanawha field, which began in the early part of 1912, and were not settled until well into the spring of the following year. The floods in the Ohio Valley in the spring also reduced shipments to the West for a considerable length of time. Of the total increase of over 4,500,000 tons, the increase in the quantity of coal made into coke in 1913 was only 75,585 tons, indicating that coke making in the State fell relatively behind; this does not mean, however, that less coke was made from West Virginia coal. Large quantities of the coal are made into coke in ovens located outside the State, and in 1913 the coal shipped from West Virginia mines for coking at distant ovens was about twice as much as that used for the same purpose in the State. There was an increase of nearly 10 per cent in the number of men employed in 1913 over 1912. The coal production of the State in 1914, according to the estimates of the United States Geological Survey, showed an increase of nearly 4,550,000 short tons over 1913. The production in some of the older districts was materially reduced, but this was partly made up by a number of new mines. The production of coke in 1914 is estimated at not much more than 55 per cent of that of 1913, but a part of the decrease in coke production is attributed to the increased use of by-product coke, none of which is made at the mines.

Second in importance among the State's mineral industries is natural gas, which, in 1913, was valued at $34,164,850, compared with $33,324,475 in 1912. Third in importance is petroleum, the output of which decreased from 12,128,962 barrels in 1912 to 11,567,299 barrels in 1913, but, on account of the sharp advance in prices in the latter year, the total value increased from $19,927,721 to $28,828,814. Next to fuels the clay products of the State are the most important of its mineral industries, and of the total value of the clay products, the potteries contributed over 60 per cent. In 1913 the total value of the clay products was $5,208,270, of which the pottery products contributed $3,424,887. In 1912 the total value of the clay products was $4,775,874. The principal quarry product of the State is limestone. The total value of the stone produced increased from $1,164,877 in 1912, to $1,193,323 in 1913. Other mineral products of importance are sand and gravel, aluminum, bromine, calcium chloride, grindstones, iron ore, mineral waters, and salt. The total value of the mineral products increased from $123,847,812 in 1912, to $143,640,633 in 1913.

TRANSPORTATION. The total mileage of railroads in the State, including only the main track, was in 1914, 3625. There were, in addition, 510 miles of second track, and 125 miles of branches. Railroads having the greatest mileage are the Baltimore and Ohio, 1063; Chesapeake and Ohio, 703; Norfolk and Western, 443; Western Maryland, 197; and the Virginian Railway Company, 119.

EDUCATION. The total school population in 1914 was 399,845, the total enrollment being 299,135, and the average daily attendance 208,004. The total number of teachers was 9820, and the average yearly salary paid to these was $349.35. Among the acts relating to education passed by the Legislature in 1913, were those providing for public drinking cups and creating a county financial secretary. Several important recommendations in respect to schools will be made to the Legislature of 1915.

FINANCE. The report of the State Treasurer issued in 1914 covers a period of 21 months, from Oct. 1, 1912, to June 30, 1914. The Legislature of 1913 changed the fiscal year from October 1 to September 30, to July 1 to June 30. This report shows a balance on June 30, 1913, of $683,466. The receipts for the fiscal year ending June 30, 1914, were $6,964,377, and the disbursements for the same period were $6,691,537, leaving a balance on June 30, 1914, of $956,306.

CHARITIES AND CORRECTIONS. The charitable and penal institutions of the State are under the supervision of the State Board of Control, and with their populations for the year ending Oct. 31, 1914, they are as follows: West Virginia Hospital for the Insane at Weston, 1023; Second Hospital for the Insane at Spencer, 552; West Virginia Asylum at Huntington, 625; Miners' Hospital No. 1, at Welch, 54; Miners' Hospital No. 2, at McKendree, 28; Miners' Hospital No. 3, at Fairmont, 38; West Virginia Penitentiary at Moundsville, 1202; Industrial School for Boys at Grafton, 305; Industrial Home for Girls at Industrial, 104; State Tuberculosis Sanitarium, 58; West Virginia Colored Orphans' Home at Huntington, 64; West Virginia Childrens' Home at Elkins, 24. The total expenditure for maintaining these institutions during the fiscal year ending June 30, 1914, was $668,493.70.

POLITICS AND GOVERNMENT. The State Legislature had no meeting in 1914, as the sessions are biennial, and the last was held in 1913. The year was of small importance politically, as the only elections held were for representative to Congress. At the election of November 3 the Democrats elected representatives in three districts, and the Republicans elected their candidates in the fourth and fifth districts and a representative-at-large. An explosion in the New River Collieries Company's mine at Eccles on April 28 resulted in the death of about 180 miners who were entombed in the mine.

On July 1 a drastic Prohibition law went into effect. A constitutional amendment providing for State-wide prohibition was carried in 1912, and the Legislature of 1913 enacted a measure putting the amendment into effect. This bill, known as the Yost Bill, is perhaps the most stringent law enforcement measure on the statute books of any State. Under its provisions it is unlawful to manufacture, sell, or give away intoxicating liquors anywhere within the State. It is also unlawful to ship intoxicating liquors to violators of the law. Druggists and club houses are prohibited from selling intoxicating liquors, and it is unlawful to advertise liquors by bill posters, circulars, newspapers, or otherwise in the State. Any violation of this law is punishable by fine or imprisonment in the county jail for first offense, and by fine and imprisonment in the State penitentiary for second offense. The law provides for a superintendent of prohibition, who has general supervision of the State, and power to see that the laws are enforced.

STATE GOVERNMENT, 1915. Governor, Henry D. Hatfield; Secretary of State, Stuart F. Reed; Superintendent of Free Schools, M. P. Shawkey; Auditor, John S. Darst; Commissioner of Agriculture, Howard E. Williams; Attorney-General, A. A. Lilly; Treasurer, E. L. Long; Adjutant-General, John C. Bond—all Republicans.

JUDICIARY. Supreme Court of Appeals: President, William N. Miller; Associate Judges, George Poffenbarger, Ira E. Robinson, L. Judson Williams, Charles W. Lynch; Clerk, W. B. Matthews—all Republicans.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	20	57	77
Democrats	10	29	39
Republican majority	10	28	38

The representatives in Congress will be found in the article UNITED STATES, section *Congress*.

WEST VIRGINIA UNIVERSITY. A State university for higher education, founded in 1867, at Morgantown, W. Va. The students enrolled in all departments of the university in the autumn of 1914, were 775, and the faculty numbered 80. There were several notable changes in the faculty during the year, among which were the resignation of Thomas E. Hodges, president of the university, and the appointment of Dr. Frank Butler Trotter, acting president; resignation of acting Dean Wells and the appointment of Professor H. C. Jones as dean of the College of Law; Dr. C. B. Cannaday was appointed professor of Latin, and Dr. F. E. Clark professor of chemistry. A School of Pharmacy was established, with Charles H. Rogers at its head. There were no noteworthy benefactions received during the year. The productive funds of the university amount to $104,000, and the income from this to $6000. The library contains 47,000 volumes.

WEYERHAEUSER, FREDERICK. An American lumberman and capitalist, died April 4, 1914. He was born in Neidersaulheim, Germany, in 1834. When he was 18 years of age he removed to the United States and went first to Erie, Pa. Four years later he removed to Rock Island, Ill., and secured work in a sawmill, where within six months he became manager of the plant, and shortly afterwards with a partner, purchased it. Mr. Weyerhaeuser realized the importance of obtaining possession of valuable timber properties in Wisconsin, the resources of which were at that time practically unknown. In 1864 he had become financially able to purchase a large tract in northern Wisconsin on which he erected a number of sawmills, and eight years later he formed an organization known as the Weyerhaeuser Syndicate. He was later elected president of the Mississippi River Boom and Logging Company, and that company became the main company of the great lumber system which he afterwards formed. He continued to organize new companies and purchase lumber land and he finally secured nearly all the timber land worth owning in the Mississippi River lumber district; and in every company that he organized he was the dominating figure.

In 1891 he removed to St. Paul, and from this city he directed the operations of his companies. With him was associated Robert L. McCormick, and they became known as the timber agents of the Northern Pacific and Great Northern Railroads. In 1897 Congress passed as a rider to the Sundry Civil Bill, a provision which permitted the holders of land within forest reserves to relinquish their tracts to the government and to select in place of them other tracts open to settlement; as a result of this the railroads relinquished thousands of acres of worthless land and obtained in exchange the possession of timber lands. The officers of the railroads working through the Weyerhaeuser companies are said to have sold great tracts of these lands to the

Weyerhaeuser Syndicate for absurdly small sums, $6 an acre being reported as the average price. The property thus acquired was 1,000,000 acres of timber land lying west of the Cascade Mountains. This was but one of a number of similar transactions. In Oregon he owned a tract of 600,000 acres, and in northern Idaho had control of companies whose assets were known to be over $26,000,000. Other companies were owned and directed by him throughout northern and western sections of the United States. As a result of these holdings Mr. Weyerhaeuser was often called the richest man in the world, although personally he was little known outside of the regions in which his operations were conducted. It was often charged that the syndicate which he operated was in reality a lumber trust and that as a result of his operations, prices of lumber were greatly increased. He denied this, and asserted that the high prices were due to the scarcity of lumber. At the time of his death it was estimated that his wealth amounted to $500,000,000.

WHEAT. The world's wheat production, as based on the crop statistics and estimates published from year to year, shows an approximate increase of 300,000,000 bushels for the decade ending with 1900 over the preceding 10 years, and of 700,000,000 bushels for the decennial period ending with 1910 over the decade ending in 1900. This increase was mostly due to a larger acreage, but also to some extent to a higher average yield per unit of area. The world's crop of 1914 was estimated by the International Institute of Agriculture as about 9 per cent under the crop of 1913, which was 4,124,900,000 bushels, the highest on record. It was pointed out that while the diminution as compared with the previous year, was quite large, the production was nevertheless over 15 per cent above the average for the 10 years 1903–1912. The aggregate shortage as compared with 1913, so far as data were at hand, was estimated by the United States Department of Agriculture at more than 386,000,000 bushels, and the shortage for Europe alone at 323,000,000 bushels. As a result of the war in Europe, which largely upset transportation facilities, there was a general rise in prices during the latter part of the year, but the increase was determined mainly by the geographical position of each individual country, as well as by its belligerency or neutrality. The countries reporting increased yields over 1913 were the United States, the United Kingdom, Spain, the Netherlands, and Bulgaria. In Australia the crop of 1913–14 was also larger than the preceding crop. The Canadian wheat crop, reduced by drouth and winter-killing, more than 200,000 acres being winter-killed in the provinces of Ontario and Alberta, was estimated at nearly 160,000,000 bushels, or over 70,000,000 bushels less than the production of 1913.

The United States produced in 1914 the largest wheat crop in its history. The production of spring and winter wheat, as estimated by the Department of Agriculture, amounted to 891,017,000 bushels from 53,541,000 acres, the average acre yield being 16.6 bushels. The total value of the crop, based on a bushel value of 98.6 cents, the average price received by farmers on December 1, reached $878,680,000. With the exception of the bushel value these were all record figures. In 1913 the production was 763,380,000 bushels on 50,184,000 acres, the average yield 15.2 bushels per acre, and the total value, based on the corresponding bushel value of 79.9 cents, $610,122,000. The production of winter wheat was exceptionally large, and was considered the largest ever produced by any country. The seasons were favorable to the growth of the crop, and the grain was harvested in good condition. An output of 684,990,000 bushels was secured from 36,008,000 acres, the rate of yield being 19 bushels per acre. The total value of the crop at 98.6 cents per bushel amounted to $675,623,000. These figures for winter wheat, excepting again the price per bushel, were also the highest on record. In 1913, 523,561,000 bushels were grown on 31,699,000 acres, the average yield per acre being 16.5 bushels, and the total value at 82.9 cents per bushel, the average price on December 1, $433,995,000. Kansas was by far the leading winter wheat State in 1914, with a production, as reported by the State Board of Agriculture, of 180,924,885 bushels from 9,061,971 acres, the average yield being 19.85 bushels per acre, the highest since 1889. The value of this crop was estimated at $151,583,031. The States ranking next to Kansas, as reported in the *American Agriculturist*, were Nebraska, with 59,375,000, Illinois with 51,000,000, Oklahoma with 47,025,000, Indiana with 44,460,000, and Missouri with 43,180,000 bushels. The highest average acre-yield, 26 bushels, was secured in Washington, Montana and Oregon ranking next with 24 bushels, and New York and Iowa with 23 bushels.

The spring wheat production, in 1914, was below normal as the result of drouth and attacks of rust in certain sections. The production amounted to 206,027,000 bushels on 17,533,000 acres, the average acre-yield being 11.8 bushels. The preceding year 239,819,000 bushels were produced on 18,485,000 acres, the average yield being 13 bushels per acre. The total value of the 1914 crop at 98.6 cents per bushel was $203,057,000, as compared with $176,127,000, the value of the preceding crop, based on the corresponding bushel value of 73.4 cents. The leading spring wheat States and their yields, as given in the *American Agriculturist*, were as follows: North Dakota 84,568,000 bushels, Minnesota 38,742,000, South Dakota 35,260,000, Washington 24,420,000, and Montana 11,280,000 bushels. The highest average yield per acre, 24 bushels, was reported for Montana, but the average yield for all the New England States, with a total of only 5000 acres, was given as 27 bushels.

WHISKY. See Liquors.

WHISTLER, Garland Nelson. American soldier, died June 26, 1914. He was born in New York City in 1847, entered the United States army as second lieutenant of the field artillery in 1867, and was promoted to be first lieutenant in 1874 and captain in 1898, in 1905 becoming lieutenant-colonel and in 1907 colonel. He was for many years in command of the school of submarine defense at Fort Totten and was a noted authority on explosives. Colonel Whistler was a second cousin of James McNeill Whistler, the artist, and was of the fourth generation of a family of soldiers, being the son of Joseph Nelson Garland Whistler.

WHITNEY, Sir James Pliny. A Canadian statesman, died Sept. 25, 1914. He was born in Williamsburg, Ontario, in 1843, and was educated in the public schools of that city. He studied law and in 1876 became a barrister, practiced at Morrisburgh, and became one of the leaders of the bar in that part of Canada. In 1890 he was made Queen's Counsel, and in 1888 was elected representative of the county of Dundas in the Provincial Legislature. He was leader of the opposition, and after the defeat of the Ross government in 1905 was called upon to form a new government. From that year until his death he was Premier and President of the Council of Ontario. He received the degrees of LL.D. from Toronto University and Queen's University, and the degree of D.C.L. from Trinity University.

WHOOPING COUGH. See VACCINE THERAPY.

WIDOWS' PENSIONS. See PENSIONS FOR MOTHERS.

WILBOUR, MRS. CHARLOTTE BEEBE. An American woman suffrage leader, died in New York City, Dec. 25, 1914. She was born at East Hartford, Conn., March 2, 1833, and was educated at the Wilbraham (Mass.) Academy. In 1858 she married Charles Edwin Wilbour of New York City, an Egyptologist. Eloquent as a public speaker, she became one of the pioneer leaders of the woman suffrage movement in America, and was associated in that work with Susan B. Anthony and Elizabeth Cady Stanton. It is said that because women were excluded from the New York Press Club dinner to Charles Dickens, Mrs. Wilbour, with the aid of Mrs. Jane C. Croly ("Jennie June") and Miss Kate Field, founded, in 1868, the Sorosis Club, the first incorporated woman's club in the United States. Of this organization she was president in 1870–75, and from 1903 to 1907, when she retired as honorary president. From 1875 to 1900 she lived abroad with her husband. She published *Sabbath School Dialogues*, and a volume of essays under the title *Soul to Soul*.

WILBUR, HENRY W. An American editor and author, died Sept. 7, 1914. He was born at Easton, N. Y., in 1851, and was educated in the public and high schools of Vineland, N. J., beginning editorial work in 1875. From 1876 to 1884 he was editor of the *Vineland Independent*, and was on the editorial staff of the *New York Voice*, a Prohibition organ from 1896 to 1898. He was a recorded minister of the Religious Society of Friends and was general secretary of the Friends' General Conference, and of the Committee for the Advancement of Friends' Principles. He was also president of the National Federation of Religious Liberals. His writings include: *A Study in Doctrine and Discipline; Five Weeks in England; Life and Labors of Elias Hicks; Job Scott, an Eighteenth Century Friend; Five Points from Barclay; Nature Stories from Darwin;* and *Development of the Spiritual Perceptions* (1914).

WILKEITE. See MINERALOGY.

WILLARD, CHARLES ANDREW. An American jurist, died March 15, 1914. He was born in St. Johnsbury, Vt., in 1857, and graduated from Dartmouth College in 1877. He then studied law at Boston University, taking the degree of LL.B. in 1879, and from that year until 1882 he practiced law at St. Johnsbury. He then removed to St. Paul, Minn., where he was in practice until 1885, from which year until 1901 he continued his practice in Minneapolis. In the latter year he was appointed associate justice of the Supreme Court of the Philippine Islands, serving in this post until 1909 when he became United States district judge for the District of Minnesota. From 1887 to 1901 he was lecturer on the law of bailments at the University of Minnesota.

WILLIAM M. RICE INSTITUTE. An institution for liberal and technical education, incorporated in 1891, in Houston, Texas. The institution opened for students in 1912 with freshmen only, but in the autumn of 1914 freshmen, sophomores, and juniors were admitted. The total enrollment at that time was 255, from 15 cities and 75 towns in Texas. The faculty numbered 35, and more than doubled in size during the year. There were no noteworthy benefactions received during the year. The endowment of the university amounts approximately to $10,000,000, and the income to approximately $500,000. The president is Edgar Odell Lovett.

WILLIAM OF WIED, PRINCE. See ALBANIA, *History*.

WILLIAMS, JOB. An American educator, died March 15, 1914. He was born at Pomfret, Conn., in 1842, and graduated from Yale College in 1864. In 1866 he became a teacher of the deaf in Hartford, Conn., and from 1879 until his death was principal of the American School for the Deaf, the pioneer institution of its kind in America.

WILLIAMS, MORGAN BRANSBY. An English engineer and railway builder, died June 22, 1914. He was born in 1825 in Bridgend, Glamorgan, Wales, and was educated at the Cowbridge Grammar School. He began life as a mining engineer, but subsequently became a civil engineer. He was engaged in the construction of the London and Northwestern Railway, the Caledonian, the London and Southwestern Railway, and also in railway building in Italy. He constructed many hundreds of miles of line in Russia, where he was chief resident engineer under Sir John Hawkshaw, and for several years general manager of one of the Russian roads. His work in that country brought him many marks of favor from Alexander II. After retiring from service in Russia he took an active part in the public life of South Wales. He probably had more to do with the construction of the first great systems in England than any other man.

WILLIAMS COLLEGE. An institution for higher education at Williamstown, Mass., founded in 1793. The total enrollment in the autumn of 1914 was 499, and the faculty numbered 59. There were no notable changes in the faculty during the year, and no noteworthy benefactions were received. The productive funds amounted, at the end of the college year 1913–14, to $1,842,243, and the income to $222,-747. The library contains about 78,000 volumes. The president is Henry A. Garfield, LL.D.

WILSON, ELLEN LOUISE (AXSON), wife of President Woodrow Wilson, died Aug. 6, 1914. Mrs. Wilson's paternal grandfather was a distinguished clergyman in Savannah, and her grandfather on her mother's side was the Rev. Nathan Hoyt, for many years pastor of the Presbyterian Church at Athens, Ga. Her father was pastor of a church at Rome, Ga., where she met and became engaged to Mr. Wilson, who was at that time practicing law in Atlanta. In 1885 they were married at Savannah. After her marriage Mrs. Wilson divided her time between household duties and painting. She had considerable ability as an artist and produced several canvasses which were exhibited in New York City and elsewhere. At Princeton, when Woodrow Wilson was president of the university, Mrs. Wilson entered heartily into all the social activities of the university and was a great favorite of the students. When she went to Washington she seemed to be in the best of health. Beside doing her full share in maintaining the White House as the social centre of the city, and endeavoring to relieve her husband of burdensome obligations, whenever possible, she became actively interested in the welfare movement in the capital and made personal excursions to its slums and alleys in an effort to gain first hand information and to promote reforms. She was greatly interested also in the conditions under which young women work in the government departments. In February, 1914, she was injured by a fall on the marble floor of the White House and this was followed by a general nervous breakdown, which was accelerated by the strenuous social season, and overexertion in social betterment work and other humanitarian endeavors. At the time of her final illness there was pending in the House a measure abolishing the alley system in Washington, and this, by a special action of Congress, was passed before her death. Mrs. Wilson was honorary president of the Southern Industrial Education Association and of the women's department of the National Civic Federation. She was also a member of many other art and philanthropic societies.

WILSON, JAMES GRANT. An American soldier and writer, died Feb. 1, 1914. He was born in Edinburgh, Scotland, in 1832, and in the following year his father brought the family to America. The son was educated by private tutors and for a time he assisted his father in the publishing business in Poughkeepsie, N. Y. He later turned to journalism and in 1857 founded the Chicago *Record*, the first literary paper in the Northwest. In 1862 he was commissioned major in the Fifteenth Illinois Cavalry, and accompanied General Grant to New Orleans. By the latter's advice he accepted the colonelcy of the Fourth Regiment of the United States colored cavalry in 1863, and for the two years following he was aide to Gen. N. P. Banks. In 1865 he was brevetted brigadier-general for faithful and meritorious services, and in June of the same year resigned from the army and returned to New York City which was his home for the remainder of his life. He engaged in literary work and was the author of a large number of biographies and historical works. He gathered together a remarkable library and a rare collection of letters, pictures, autographs, and other mementoes of famous persons he had known. These included: Washington Irving, William Cullen Bryant, and American authors down to the present generation; Presidents from Lincoln to Wilson; Dickens, Thackeray, Gladstone, and other Europeans and continental persons of note. His first published book was *Sketches of Illinois Officers*, issued in 1862. The works which followed included: *Mr. Secretary Pepys and His Diary* (1867); *Life of Fitz-Greene Halleck* (1869); *Sketches of Illustrious Soldiers* (1874); *Bryant and His Friends* (1886); *Life of General Grant* (1897); *The Presidents of the United States, 1789–1901* (1902); *Thackeray in the United States* (1904); *Commodore Isaac Hull and the Frigate Constitution* (1910). He also edited many books of reference and several series of historical works, which include: *Appleton's Cyclopædia of American Biography*, and *Memorial History of the City of New York*. He received the degree of D.C.L. from St. Stephen's College, L.H.D. from Hobart College, and in 1909 he was vice-president of the Hudson-Fulton Commission.

WILSON, PRESIDENT. See INTERNATIONAL ARBITRATION AND PEACE, *President Wilson's Offer of Mediation;* UNITED STATES, *passim.*

WINCHELL, NEWTON HORACE. An American geologist and archæologist, died May 2, 1914. He was born in North East, Duchess Co., N. Y., in 1839, graduated from the University of Michigan in 1866, and in the same year became superintendent of public schools at Adrian, Mich., serving until 1869. He was assistant State geologist in 1869–70, and from 1870 to 1872 was assistant in the geological survey of Ohio. From 1870 to 1900 he was State geologist of Minnesota, serving at the same time as professor of geology and mineralogy at the University of Minnesota, which chair he held until 1900. From 1906 until the time of his death he was archæologist for the Minnesota Historical Society. In 1888 he founded *The American Geologist* and was the editor of this publication until 1905. He was founder and three times president of the Minnesota Academy of Sciences and was a member of many other American and foreign scientific societies. His published writings include: *Catalogue of the Plants of the State of Michigan* (1861); *Geology of Ohio and Minnesota* (1872–1900); *The Iron Ores of Minnesota* (with Horace V. Winchell, 1891); *Elements of Optical Mineralogy* (with Alexander N. Winchell, 1909); and *The Aborigines of Minnesota*, as well as many papers contributed to scientific journals.

WINDWARD ISLANDS. A group of British West Indian colonies—St. Lucia, St. Vincent, and Grenada; together with the Grenadines, attached partly to Grenada, and partly to St. Vincent. See articles on separate colonies. Geographically, Barbados, Trinidad, and Tobago belong to the group, and were formerly associated with it politically. The three colonies are united for administrative purposes under one Governor (Lieut.-Col. Sir James Hayes-Sadler in 1914), residing at St. George's, Grenada.

WINES. See LIQUORS.

WINSLOW, HERBERT. A rear admiral (retired) of the United States navy, died Sept. 25, 1914. He was born at Roxbury, Mass., in 1848, and graduated from the United States Naval Academy in 1869. He was appointed ensign in 1870 and was promoted to be master in 1872, lieutenant in 1875, lieutenant-commander in 1897, commander in 1900, captain in 1905, and rear admiral in 1909. While on duty on the *Saranac* in 1875, with the rank of lieutenant, the vessel was wrecked in Seymour's Narrows, British Columbia, and Lieutenant Winslow was the last man to leave the ship. During the Spanish-American War he commanded the dispatch boat *Fern*, which took part in the battle of Santiago. At the time of the Boxer uprising in China in 1900 he was in command of the *Solace* on the Asiatic station, and landed the first detachment of marines at Taku. His last active duty was at the Boston Navy Yard. He was retired in 1910, and from that year until his death lived at Cherbourg, France.

WIRELESS TELEGRAPHY AND TELEPHONY. Considerable progress was made during the year in the construction of radio stations of great power, as well as in the perfection of apparatus designed to furnish sustained waves of particular frequencies. This was especially true, also, in connection with radio-telephony, which, while not yet in the commercial stage of development, was nevertheless successfully carried on by several experimenters in various parts of the world. The United States navy completed a powerful radio-station at Chelsea, Mass., destined to be one of a great chain of such stations extending from Portland, Maine, down the Atlantic Coast, and including a station under construction at Panama, thence up the Pacific Coast to Alaska, several of which stations will be able to communicate with those at Honolulu, and in the Philippines. The Arlington radio-station, mentioned in the 1913 YEAR BOOK, began, during the year, sending out regular time signals twice daily, at noon and at 10:00 P. M. These were found to be of increasing value as evidenced not only by the number of small radio-sets installed in the various cities and towns to receive standard time, but also on account of the great value to vessels at sea, whose navigators were thus able to check their chronometers even when, as was reported in one case, the ship was in South American waters, more than 4000 miles distant from Arlington. Similar signals were sent out from Key West and New Orleans. In addition to these, the government radio service was of the greatest value in disseminating warnings of approaching storms.

An interesting application of the principles of radio apparatus was used in a device installed during the summer of 1914, by the New York Edison Company, for announcing the approach of lightning storms; this gave warning of atmospheric disturbances of this kind as much as two hours before their actual visibility in the sky. The darkness caused by these storms, being of course accompanied by a great increase in the demand for electricity on the lighting circuits, the new wireless device gave ample warning to the central station attendants, so that additional boilers and generating units could be started up. The station was equipped with a detector apparatus, similar to that of a low-power radio outfit, the coherer of which had in its circuit an electric bell and battery, thus announcing the proximity of a storm.

At the close of the year the Marconi Company had begun work on a wireless station near Astoria, Oreg., said to be the most powerful on the Pacific Coast, that would be able to send 3500 miles at night, and was to cost about $80,000. In India powerful radio-stations were opened at Carachi, and Butcher Island, Bombay, with a sending range of 600 miles.

A number of inspectors of the Bureau of Navigation of the Department of Commerce of the United States were regularly employed in making tests of the wave-length and logarithmic decrement of the sending apparatus at all public radio shore stations, as well as those on vessels in United States ports. The conditions fixed by the radio communication laws as to sending wave lengths, the shape and kind of wave length, and the logarithmic decrement, were investigated by the use of a portable decremeter devised at the United States Bureau of Standards by F. A. Rolster. These periodical examinations resulted in raising the general standard of radio service, and rendering it more satisfactory not only under ordinary conditions, but in cases of danger and disaster as well.

The aspect of radio communication as regards patents was interesting. During the year, while a great many patents were issued, most of them were granted on previous applications for improvements of detail. Many cases occupied the attention of the United States Courts, among the most important of which were the basic claims of Marconi and Fessenden, which were sustained on broad grounds, and suitable injunctions regarding infringements issued.

The United States army was making field tests of what was probably the most powerful portable wireless station built. It was carried on the chassis of a motor truck, had a sending range of 800 miles, and could receive from a distance of 2500 miles. The propelling motor of the truck was arranged to drive the generator supplying current to the apparatus, and an 85-foot mast packed in 9 sections was carried with the outfit. When brought to the desired point this station could be set up complete for sending messages within 12 minutes.

The outbreak of the European War brought about many interesting developments in connection with transatlantic radio service. The proclamation by President Wilson on Aug. 5, 1914, concerning neutrality, was supplemented by a specific order prohibiting radio stations within the jurisdiction of the United States from transmitting or receiving messages of an unneutral nature, and from in any way rendering to any of the belligerent powers any unneutral service during the continuance of hostilities. Enforcement of the order was delegated to the Secretary of the Navy, and immediately the more important stations of Tuckerton, N. J., Sayville, N. Y., Cape Cod, Mass., and Portland, Maine, as well as a number of amateur stations at various places along the coast, were closed except in accordance with the conditions of this order. The station at Sayville, L. I., that had communicated regularly with that at Nauen, Germany, was closed by the government, but shortly after the declaration of war was reopened in charge of a censor. The Tuckerton, N. J., station was also taken in charge by the government authorities, and some comment was caused by the interruption to its operations which occurred. This, being due to an accident to the generator, however, was subsequently repaired, and the station resumed communication with that at Eilvese, Germany. The well-known difficulty of securing facts concerning the operations of the forces engaged in the European War made it impossible to obtain more than a few instances of the great advantage secured by the use of wireless apparatus, both in the navy and between land stations. It was reported that German Zeppelins were using a type of radio set weighing only 50 pounds, that possessed a daylight working range of 125 miles, and British aëroplanes were said to have made successful use of a set weighing only 15 pounds that could communicate with points 20 miles away.

After the war had been in progress a few weeks many reports were published in the American daily press of the existence of suspicious wireless stations in various localities, particularly along the Atlantic and Pacific Coasts. In most instances, however, these were found, on investigation, to be amateurs' outfits, with a very limited sending range, and entirely innocent of any unneutral communications.

Radio-Telephony. The principal difficulty met by investigators in radio-telephony seemed to be that of developing instruments capable of transferring the delicate modulations of the comparatively feeble sound waves of the voice to the antennæ at the sending station, which obviously required large amounts of energy in order to transmit to great distances. In France, the Colin-Jeance system was considerably developed during the year. From the transmitting station at Paris satisfactory conversation was maintained with another 62 miles away. In this system, radiations, of sufficiently high frequency for speech transmission, were secured by enclosed arcs produced in an atmosphere of mixed hydrogen and acetylene, and a microphone or group of microphones equipped with a megaphone, into which the operator talked, was placed in the circuit. It was stated that the best results were secured with a wave length of approximately 1000 meters.

The Union Pacific Railroad was working on a system of wireless telephone communication between stations and moving trains, and it was reported that satisfactory conversation had been secured at a distance of 100 miles. Signor Marconi made extensive investigations during the year on the possibilities of radio-telephony, and devised apparatus that enabled him to communicate successfully between Rome and Vienna, 600 miles; to vessels in the Mediterranean, nearly 400 miles away; and on several occasions between Rome and Clifden, Ireland, a distance of 1750 miles. All these results were secured in daylight transmission.

WISCONSIN. Population. The estimated population on July 1, 1914, was 2,446,716. The population in 1910, was 2,333,860.

Agriculture. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	1,725,000	69,862,000	$45,410,000
	1913	1,650,000	66,825,000	40,095,000
Wheat	1914	184,000	3,511,000	3,511,000
	1913	190,000	3,665,000	3,005,000
Oats	1914	2,300,000	62,100,000	26,703,000
	1913	2,275,000	83,038,000	30,724,000
Barley	1914	675,000	18,428,000	11,425,000
	1913	725,000	18,125,000	10,875,000
Rye	1914	412,000	6,798,000	6,186,000
	1913	425,000	7,488,000	4,240,000
Potatoes	1914	304,000	37,696,000	11,309,000
	1913	295,000	32,155,000	17,364,000
Hay	1914	2,550,000	*a* 4,462,000	41,497,000
	1913	2,375,000	3,848,000	42,718,000
Tobacco	1914	45,600	*b* 53,808,000	5,919,000
	1913	43,000	50,740,000	6,089,000

a Tons. *b* Pounds.

Mineral Production. The chief mineral product of Wisconsin is zinc, which represents nearly 25 per cent of the total value of the mineral products of the State. Wisconsin leads all the States in the value of mineral waters produced, this value being, however, only about one-fourth that of the zinc produced. In the production of primary spelter Wisconsin ranks fourth among the States, but when the zinc content of the ores mined is considered, New Jersey takes precedence over Wisconsin, and the latter drops to fifth in rank. The zinc content of the ore mined in Wisconsin decreased from 33,050 short tons, valued at $4,560,900, in 1912, to 30,110 short tons, valued at $3,372,320, in 1913. Until 1913, iron ore was second in importance among the mineral products of the State, in which year, however, it was surpassed in value by the clay products. The marketed production of iron ore in 1913 was 896,243 long tons, valued at $2,149,397, a decrease in quantity from 1,152,250 tons in 1912, and in value from $2,731,574. The value of the stone produced in the State in 1913 was $2,157,980, the principal quarry products being limestone and granite. The only other product which exceeded $1,000,000 in annual value was that of the clay pits, and the value of the clay products decreased from $1,044,486 in 1912 to $1,020,028 in 1913. The chief product is common brick. Other commercial mineral products of the State are graphite, lead, mineral paints, pyrite, sand and gravel, sand-lime brick, and silica. The total value of the mineral products decreased from $14,192,287 in 1912 to $12,452,480 in 1913.

Charities and Corrections. The charitable and correctional institutions of the State include the following (the populations are given for the year ending Sept. 30, 1914): State Hospital for the Insane at Mendota, 620; Northern Hospital for the Insane at Winnebago, 617; School for the Deaf at Delavan, 186; School for the Blind at Janesville, 116; Industrial School for Boys at Waukesha, 406; Wisconsin State Prison, at Waupun, 752; State Public School at Sparta, 138; Home for Feeble-Minded at Chippewa Falls, 1082; Wisconsin State Reformatory at Green Bay, 244; State Tuberculosis Sanatorium at Wales, 166; Milwaukee Hospital for the Insane, 657; and county asylums for the insane, 5422. The total population of all these institutions was 10,463. They are managed by a central board known as the State Board of Control, which has complete supervision over all institutions, and is also the parole board of the Wisconsin State Prison, the Wisconsin State Reformatory, the Industrial School for Boys, and the Milwaukee County House of Correction. The board has charge also of State probation matters, and all persons placed upon probation by the courts of the State are put under the supervision of the State Board of Control. The Legislature of 1913 provided for two additional institutions, an Industrial Home for Women in Fond du Lac County, and a new Home for the Feeble-Minded and Epileptic in Racine County. The Legislature also authorized the Board of Control to make an investigation of the question of mothers' pensions, and the question of administering outdoor relief, reports of which investigations will be made to the Legislature of 1915. The total expenditures for the maintenance of charitable and penal institutions for the year ending June 30, 1914, was $1,188,800. There were in the State on that date 35 county asylums, with a population of 5500. Each county asylum has a large farm connected with it, and ample provision is made for giving the patients an outdoor life. The State has made provision for the care of dependent, crippled, and deformed children, and for the treatment of such children. It has also made provision for the segregation of tubercular chronic insane persons, and those persons have been taken out of the county asylums and placed in separate institutions.

FINANCE. The report of the State treasurer shows a balance on June 30, 1913, of $1,924,890. The receipts for the fiscal year 1914 amounted to $21,404,859, and the disbursements to $19,028,895, leaving the balance on June 30, 1914, $4,300,854. The State debt at the end of the fiscal year amounted to $2,251,000. Of this $1,563,700 was due to school fund.

POLITICS AND GOVERNMENT. The State Legislature did not meet in 1914, as the sessions are biennial, and the last was held in 1913. Elections were held for Governor, and other State officers, for United States Senator, and for representatives to Congress. Primary elections for nominations were held on September 1. The Republicans nominated for Governor, E. L. Philipp, and the Democrats John C. Karel; for United States Senator the Republicans nominated Governor F. E. McGovern, and the Democrats Paul Husting. The nomination of Governor McGovern was extremely interesting in that his candidacy was opposed by Senator La Follette, and the result of the primary was taken to indicate that the latter's influence in the State had lessened. In the elections of November 3, the Republicans elected their candidate for Governor, who received 140,787 votes, compared with 119,509 for Karel, Democrat, 32,560 for Blaine, Independent-Progressive, 25,917 for Ameringer, Social Democrat, 6279 for Emerson, Prohibitionist, and 352 for Vierthaler, Socialist-Labor.

The vote for Senator was so close that McGovern asked for a recount. Before the recount was completed, however, Husting brought an action before the Supreme Court and an order was entered requiring that returns be sent in to the Secretary of State as required by statute, notwithstanding the fact that an incomplete recount was in progress, and holding further that the contesting candidate's only recourse was to carry the contest to the United States Senate, a step which was not eventually taken. Mr. Philipp's candidacy for the Governorship was made largely on a campaign of lower taxes and reduced State expenses. On April 7 Gerhard Balding was reëlected Mayor of Milwaukee on a non-partisan ticket, defeating the Socialist candidate, Emil Seidel.

The total vote cast in the election was 325,430, compared with 393,849 in the presidential election of 1912. The Republicans showed a loss of 38,573, the Democrats a loss of 47,807, the Social Democrats a loss of 8551, Socialist-Labor a loss of 2901, and the Prohibitionists a loss of 3154. There were no Roosevelt Progressive candidates, Blaine being a La Follette Republican running independently.

The eugenic marriage law passed by the Legislature of 1913, requiring a physical examination of the male applicant for a marriage license, was declared unconstitutional by the Circuit Courts on Feb. 9, 1914, but was upheld by the Supreme Court in a decision holding the statute to be a valid exercise of the police power.

STATE GOVERNMENT, 1915. Governor, E. L. Philipp; Lieutenant-Governor, E. F. Dithmar; Secretary of State, John S. Donald; Treasurer, Henry Johnson; Attorney-General, W. C. Owen; Superintendent of Education, C. P. Cary; Commissioner of Insurance, H. L. Ekern; all Republicans.

JUDICIARY. Supreme Court: Chief Justice, John B. Winslow, Democrat; Associate Justices, Wm. H. Timlin, Democrat; R. G. Siebecker, Democrat; A. J. Vinje, Republican; Rouje D. Marshall, Republican; J. C. Kerwin, Republican; John Barnes, Democrat; Clerk, Clarence Kellogg, Republican.

STATE LEGISLATURE, 1915.

	Senate	*House*	*Joint Ballot*
Republicans	23	57	80
Democrats	6	24	30
Socialists	1	6	7
Nonpartisans	3	13	16
Republican majority	13	14	27

The representatives in Congress will be found in the article UNITED STATES, section *Congress*.

WISCONSIN, UNIVERSITY OF. A State institution of higher learning at Madison, Wis., founded in 1848. The number of students enrolled in all departments in the autumn of 1914, was 4874, excluding the summer session and winter short course, and the faculty numbered 694, of whom 182 were half time. There were no notable changes in the faculty during the year, and no noteworthy benefactions were received. The productive funds of the university amount to about $680,000, and the income from this to $32,810. There were 210,000 volumes in the library. The president is Charles R. Van Hise, Ph.D.

WOMAN'S CHRISTIAN TEMPERANCE UNION, NATIONAL. An organization formed in Ohio, in 1874, for the abolition of the liquor traffic, and for other similar purposes. The Forty-first Annual Convention of this organization was held in Atlanta, Ga., November 12–18, 1914, when reports on all departments of the work were made by the superintendents of these departments. The Union took a prominent part in the prohibition campaigns in the various States during the year, including campaigns in Virginia, West Virginia, Tennessee, and other States in which movements for prohibition were active. The total receipts for the fiscal year 1913–14 amounted to $158,139, and the total disbursements to $115,538. In 1914 there were about 12,000 local unions with a membership, including the children's societies, of about 500,000. The World's Woman's Christian Temperance Union, founded by Frances H. Willard in 1883, is organized in over 50 countries with a membership of about 500,000. The National Union has 40 distinct departments, with national headquarters at Evanston, Ill. Its official organs are *The Union Signal* and *The Young Crusader*. The officers of the Union in 1914 were: president, Miss Anna A. Gordon; corresponding secretary, Mrs. Frances P. Parks; treasurer, Mrs. Elizabeth B. Hutchinson.

WOMAN SUFFRAGE. INTERNATIONAL. The movement to extend political rights to women was enthusiastically endorsed by the International Council of Women, whose convention at Rome in May was attended by delegates of 22 different nationalities, representing seven millions of women. When, in the summer, Europe was on the verge of a general war, the Committee of the International Woman Suffrage Alliance, representing 26 countries and 12,000,000 women, presented to Sir Edward Grey and to the ambassadors in London an anti-war manifesto, appealing to them to strive for a pacific settlement of the international crisis. After the outbreak of the War of the Nations, Mrs. Carrie Chapman Catt, the president of the International Woman Suffrage Alliance, arranged for a European suffragist, Mrs. Rosika Schwimmer (Hungary), to come to the United States in the interests of peace. On September 18 Mrs. Schwimmer interviewed President Wilson, urging him to negotiate insistently for the conclusion of an armistice, during which the warring nations might discuss their grievances. Mrs. Schwimmer presented petitions from women's organizations in Australia, Canada, Denmark, France, Holland, Hungary, Italy, Norway, Russia, Sweden, Great Britain, Germany, and the United States.

UNITED STATES. The energetic and well-organized attempts of the suffragist leaders in the United States to obtain the passage of the National Woman Suffrage Amendment Resolution (proposed in the House of Representatives by F. W. Mondell and in the Senate by George E. Chamberlain, April 7, 1913) met with decidedly discouraging results in the early part of the year. As the Judiciary Committee of the House had persistently shelved all woman suffrage resolutions, the partisans of votes for women had demanded the creation of a new House committee especially to deal with questions regarding women's political rights. This project was declined by the Rules Committee of the House of Representatives on January 24, by a tie vote. Shortly afterwards, in their caucus of February 3, the Democrats of the House voted 123 to 57, "That it is the sense of the caucus that the question of woman suffrage is a State and not a Federal question." The decision of the caucus was in effect a direct condemnation of the principle of the National Woman Suffrage Amendment Resolution, which contemplated the enfranchisement of women by amendment of the Federal Constitution. The Resolution came up before the Senate on March 19, and failed to obtain the requisite two-thirds vote, as 35 votes were recorded in the affirmative, and 34 in the negative. Unwilling to admit defeat, Senator Bristow on the following day re-introduced the measure in the Senate. On May 5 the House Judiciary Committee belied its reputation as the "morgue for suffrage resolutions" by reporting the Resolution to the House. Meanwhile an alternative bill had been drafted by Senator Shafroth, providing for a mandatory referendum on woman suffrage in any State on petition of 8 per cent of the legal voters of that State; this measure, it was considered, would be less offensive than the National Woman Suffrage Amendment Resolution to the champions of States Rights. On May 2 the suffragists in the United States celebrated "Woman's Independence Day" with monster mass meetings and demonstrations in almost every State of the Union. At Washington a gigantic parade marched on the capitol and petitioned Congress in favor of votes for women. Less ambitious, but perhaps more significant, was the delegation of 500 workingwomen received by President Wilson on February 2. Their leader, Miss Margaret Hinchey, formerly of the New York Laundry Workers, urged the President to use all his influence to "wipe out this great injustice to women." The President was courteous, but pleaded his inability to take up the matter as the leader of a party. On June 30 he told another delegation that woman suffrage was a State issue. The General Federation of Women's Clubs, meeting at Chicago, and representing 1,600,000 women, officially endorsed woman suffrage on June 13. August 15 was "Sacrifice Day" for the woman suffragists, many of whom contributed rings and other jewels for "the Cause." Their devotion was rewarded by the triumph of woman suffrage in two more States in the November elections. Montana and Nevada were added to the list of nine States in which women exercise the franchise: Arizona (1912), California (1911), Colorado (1893), Idaho (1896), Kansas (1912), Oregon (1912), Utah (1896), Washington (1910), and Wyoming (1869). In Missouri, Nebraska, North Dakota, and South Dakota, woman suffrage was defeated. The forty-sixth Annual Convention of the National American Woman Suffrage Association, held in November, at Nashville, Tenn., elected Dr. Anna Shaw of New York president for the ensuing year, and Mrs. Stanley McCormick of New York vice-president.

In Illinois the constitutionality of the Woman Suffrage Act was upheld by a decision of the State Supreme Court in the Scown case. The Lower House of the Kentucky State Legislature rejected a woman suffrage amendment on March 11. A similar fate attended a Woman Suffrage Bill in the Maryland Legislature, February 18. In Massachusetts, however, the Woman Suffrage Amendment resolution was passed by 34 votes to 2 in the Senate (March 10), and by 168 to 39 in the House (March 26). If passed by the Legislature again in 1915, the amendment will be referred to the voters of the State. The Senate and Assembly of New Jersey also passed a resolution, which, if passed once more, will enable the voters to decide on the question of woman suffrage. In New York attention was drawn to the woman suffrage campaign at the very beginning of the year by the picturesque "hike" of the redoubtable "General" Rosalie Jones, with her "Colonel" Ida Craft, and a few other stout-hearted soldiers of suffrage. They tramped from New York to Albany, called on Governor Glynn, and presented him with a "Votes for Women" hatband. The Foley-Sullivan Women Watchers Bill, to allow women to act as watchers at the polls, was passed in the New York State Assembly on February 17 by 105 to 8. The New York State Campaign Convention at Rochester in October laid elaborate plans for "victory in 1915," and elected Mrs. Raymond Brown of New York City president of the Association. In Virginia, the House of Delegates rejected a woman suffrage resolution on March 11 by a large majority.

FOREIGN COUNTRIES. In January it was announced officially that the militant tactics of the woman suffragists in Great Britain had occasioned 48 arrests in the preceding 9 months. The "Cat and Mouse" Act, whereby women prisoners were temporarily released when self-imposed abstinence from food endangered their lives, had been responsible for a decline of militancy. Though less frequent, the acts of violence were still numerous enough. Houses were burned at Comrie, Scotland; an ancient church was fired at Whitekirk, Scotland; a bomb was exploded in St. John's, Westminster; a $500,000 Velasquez painting was slashed by Mary Richardson; many other valuable canvasses were disfigured; a Burne Jones window was daubed with paint; Bath Hotel was burned; the historic Coronation Chair in Westminster Abbey was damaged by the explosion of a bomb. Burning churches and disfiguring works of art were the most favored methods of the militants. A woman suffrage bill introduced in the House of Lords by Lord Selborne was defeated by 104 to 60 votes, May 6. In June, Premier Asquith consented to receive a deputation of suffragists. After the outbreak of the war, early in August, the militant suffragists became most strenuous supporters of the government, and Mrs. Pankhurst seconded Earl Kitchener's appeals for recruits to fight the Germans.

In Germany, during the month of April, the well-known British suffragist Miss Sylvia Pankhurst was prevented by the police from addressing a Berlin meeting. In Denmark, a constitutional reform bill was passed in June by the Lower House, including a provision to give women the right to vote in Parliamentary elections. In Sweden, on July 2, 350,000 women petitioned Parliament for the right to vote. See ELECTORAL REFORM; FEMINISM.

WOMEN AND THE WAR. See FEMINISM; and RED CROSS.

WOMEN IN INDUSTRY. As in other recent years the problems growing out of the industrial employment of women received much attention. New laws relating to the hours and other conditions of work are noted below. The newest problem in this field is provision for working mothers, especially widows, with minor children, treated under PENSIONS FOR MOTHERS. A question receiving great legislative and administrative consideration is the effect of the low wages of women workers, and the provision of that minimum compensation required by health and morals (see MINIMUM WAGE, and PROSTITUTION). The important judicial decisions affecting the constitutionality of the prohibition of night work in New York, and the limitation of woman's workday to 10 hours in Ohio, are treated below.

LEGISLATION. *The hours and working conditions* of women's labor were affected by legislation in Massachusetts, Mississippi, New York, South Carolina, and Virginia, in addition to the law enacted in the District of Columbia. The amendments to the laws of Massachusetts and South Carolina were slight. Mississippi established a 10-hour day and 60-hour week for women in laundries, millinery, dressmaking, offices, mercantile establishments, theatres, telegraph and telephone offices, and many other occupations, except in case of emergency or public necessity. New York extended its law establishing a 9-hour day and a 54-hour week to include all women over 16 years of age in all mercantile establishments of the State; this law had previously applied to first-class cities only. The latest hour of employment is made 10 P. M.; 9 hours per day may be exceeded only when compensated for by a shorter day of the same week, and a working week may include not more than six days. The week from December 18 to 24 inclusive is exempted from these restrictions. The lunch time may be reduced below 45 minutes at the discretion of the Commissioner of Labor. Virginia extended its 10-hour law to all women and children under 14 in mercantile establishments in towns over 2000 on Saturdays and to all such working in laundries. Males under 21 and females in that State may not be employed in any capacity where intoxicating liquors are handled, except in hotels and mercantile establishments in the country. Rural canning and fish packing establishments are exempt from this liquor law; and, moreover, bookkeepers, stenographers, cashiers, and office assistants are not included within its scope.

District of Columbia. Early in the year both the Senate and the House by unanimous vote passed the La Follette 8-hour law limiting to 8 hours per day and 48 per week the employment of women in various occupations in the District of Columbia. Nearly every occupation was included except employment in private offices, and as domestic servants in private homes. Hotel servants, clerks in department and other retail stores, and similar workers who frequently are exempted were all brought under the law. The law specified all manufacturing, mechanical, or mercantile establishments, laundries, hotels, restaurants, telephone or telegraph offices, and express and railway companies. This same statute established a 6-day week, and prohibited night work for minors; thus no female under 18 may work in any specified industry between 6 P. M. and 7 A. M. Where three or more females are employed, they may not be employed more than 6 hours continuously without a 45-minute intermission, unless work for the day terminates at 1:30 P. M. Employers must conspicuously post information showing working hours and lunch period; and must keep a time book for every female employee, showing her hours, wages, and lunch period. Enforcement is rendered more effective by the appointment of three inspectors, two of them women, at $1200 per year. The law resulted from an active campaign by the National Consumers' League, which had made investigations in the District which revealed, among other things, that women worked in steam laundries an average of 12 or 13 hours per day for periods of 2 to 3 months during busy seasons. One of the main objections urged against the passage of this law was that it would result in lowering day wages. This was met by complete evidence showing that a reasonable limitation of length of the working day increases efficiency and consequently wages.

JUDICIAL DECISIONS. *New York.* The New York Legislature of 1913 passed a law forbidding the employment of women in factories between the hours of 10 P. M. and 6 A. M. On December 11, 1913, the Charles Schweinler Press of New York City was charged with violating this law. A similar law of 1903 had been declared unconstitutional in 1907 by the State Court of Appeals on the ground of unwarrantable interference in women's freedom of contract. Moreover, that law had omitted reference to the health of women, whereas the 1913 law was enacted "in order to protect the health and morals of females employed in factories." By a vote of three to two the Supreme Court in July reversed the 1907 decision, the law being upheld as a proper exercise of the police power in the interest of the public health and welfare. The case was carried to the Court of Appeals. A notable factor of this case was the compilation of a 500-page brief containing scientific, medical, and sociological facts relating to the effects of labor upon the physical and moral status of woman, prepared by Mr. Louis D. Brandeis and Miss Josephine Goldmark, entitled "Facts of Common Knowledge." This compilation revealed to the Court the great attention paid to the question of night work of women during the past 10 or 15 years, and the universality of the opinion that such work is more injurious to women than to men.

Ohio. An Ohio law limiting the hours of labor for women in certain industries to 10 per day and 54 per week was attacked by a milliner who alleged the law to be unconstitutional. The case reached the United States Supreme Court which rendered its decision early in the year, sustaining the law. The attorney-general of Ohio enlisted the aid of Mr. Louis D. Brandeis and Miss Josephine Goldmark in upholding the law. The two last submitted an extensive brief representing the evidence of social workers, economists, factory inspectors, and others, showing the evil effects of long hours on health, morals, and efficiency. The physiology of fatigue was presented. The precedents for the determination of this case were found in the upholding of the Oregon 10-hour law by the same court in 1908; the notable decision of the State Supreme Court of Illinois in 1910, upholding a 10-hour law; and similar subsequent decisions in Massachusetts, Michigan, California, and Washington.

HOME WORKERS IN MASSACHUSETTS. The Bureau of Statistics of Massachusetts in cooperation with the Department of Research of the Womens' Educational and Industrial Union, published a report on "Industrial Home Work in Massachusetts." The inquiry covered 284 employers who were giving out home work to 2409 home workers. Fairly complete information was secured for 134 establishments, estimated to have 20,075 home workers. It was found that wages paid for home work were low, three-fifths of such workers earning less than $100 per year, and four-fifths earning less than $150 per year. Few families, however, were found wholly dependent on home work; and few instances of excessive hours and very low wages correlated with extreme economic exploitation were discovered. The inquiry revealed little competition between factories and home workers. It showed that employment in home work was very irregular; that child labor was a conspicuous feature, partially limited by new legislation in 1913. Of the home workers of 16 years of age and over, three-fifth were married women; and over four-fifths of the women home workers had an adult male wage earner in the family. Living conditions in the homes visited were generally good and home work was not confined to the congested tenement districts. The report favored the extension of the laws regarding licensing and inspection of home industries.

STORE WORKERS IN OHIO. The Industrial Commission of Ohio issued a report on "Wages and Hours of Labor of Women and Girls employed in Mercantile Establishments in Ohio in 1913." This report covered 1086 establishments employing a total of 15,744 women and girls. Nearly two-thirds of these were employed in the cities of Cincinnati, Cleveland, Columbus, Dayton, and Toledo. Of the total number of employees, 14,635 were 18 years of age and over. Of these 7.1 per cent received $4 or less per week; 44.8 per cent received over $4, but under $8; 28.8 per cent received $8 to $10; but under 20 per cent received more than $10 per week. Of the 1109 females under 18 years of age, 10.5 per cent received $2 or less; 21.7 per cent received over $2, but not over $3; 31.9 per cent received over $3, but not over $4; 23 per cent received over $4, but not over $5; and only 1.8 per cent received more than $7 per week. The Commission concluded that prevailing rates of pay for adult women in mercantile establishments were from $6 to $8 per week, while for girls under 18 they were from $3 to $5 per week. The Commission assumed that $8 per week constituted a living wage for women and girls 18 years of age and over, and it found the following percentages of such employees in the mercantile establishments in the cities named receiving less than this wage: Cincinnati, 48.2; Cleveland, 35.7; Columbus, 46.9; Dayton, 53.2; and Toledo, 57.0 Taking $4 per week as a normal wage for girls under 18, there were found the following proportions of such girls employed in mercantile establishments receiving less than that sum: Cincinnati, 61.4; Cleveland, 28.9; Columbus, 68.8; Dayton, 30.8; Toledo, 28.2.

GREAT BRITAIN. There was issued during the year a volume, based on the census of 1911, which showed that the number of "occupied females" in England in 1911, was 4,831,000, as compared with 4,171,000 in 1901. A striking feature of this report was the great increase in the number of women in professional and semiprofessional lines. Medical women had increased from 212 in 1901, to 495 in 1911. Women have increasingly entered medical research, and a number of hospitals exist with women positions only. In the wholesale trades there were 59,944 engaged in 1901, and 126,847 in 1911. In the teaching profession, the proportion of women had risen to 745 in every 1000 schoolmasters, teachers, professors, and lecturers in 1891, but had then fallen to 727 in 1911. This was almost exactly the same proportion as in 1861. There was, on the other hand, an extraordinary advance in the proportion of women among photographers, in commercial and business pursuits, in the telegraph and telephone service, in the boot-making trade, and in tobacco manufacturing. By contrast there was a decline in the proportion of women in the laundry and washing industry, in straw-hat manufacturing, in lace making, and some other trades. As in America, so in England, women are found in many strange occupations, such as shepherdesses, pilots, watchmen, and plumbers. Among the most menial workers were 126,000 charwomen, of whom nearly four-fifths were reported as married.

Bibliography. E. B. Butler, *Saleswomen in Mercantile Stores;* L. D. Brandeis and Josephine C. Goldmark, *People of the State of New York, against Charles Schweinler Press, a corporation, defendant* (also a similar collection on effects of long hours of work by the same authors, and others in connection with the Oregon case); J. C. Goldmark, *American Legislation Restrict-*

ing the Hours of Labor for Women; Massachusetts Minimum Wage Commission, *Wages of Women in the Brush Factories of Massachusetts;* E. J. Morley, *Women Workers in Seven Professions;* A. Benedict-Roche, *Salesmanship for Women;* Washington Industrial Welfare Commission, *Report on the Wages, Conditions of Work, and Standards of Living of Women Wage-earners in Washington.*

WOMEN'S CLUBS, GENERAL FEDERATION OF. This body is a federation of the State federations of women's clubs, and has a membership of about 135,000, an indirect membership of about 660,000, and an affiliated membership of about 600,000. The general body provides a programme for the work of the various State clubs. This includes the department of art, bureau of information, department of civics, department of civil service reform, department of conservation, department of education, peace committee, political science committee, department of household economics, department of industrial and social conditions, department of legislation, department of music, department of public health, and department of literature and library extension. These are each under a separate leader. The president, in 1914, was Mrs. Percy V. Pennypacker. The recording secretary is Mrs. Harry L. Keefe; corresponding secretary, Mrs. Eugene Reilley; treasurer, Mrs. William B. Williams.

WOOD ALCOHOL. See ALCOHOL; OCCUPATIONAL DISEASES.

WOODBURY, JOHN MCGAW. An American physician and public official, died Sept. 23, 1914. He was born in New York City in 1856, and graduated from Princeton University in 1879. He later studied medicine at Columbia University and Bellevue Hospital, and then went to Heidelberg and Vienna to improve himself in his profession. He served as division surgeon with the rank of major in the Spanish-American War, and when civil government was established in Porto Rico, Dr. Woodbury was made medical director at Ponce. He at once cleaned up the jails, streets, markets, and stables so thoroughly as to attract more than local attention, and his efficiency resulted in his appointment as Street Cleaning Commissioner of New York City under Mayor Seth Low. He took office on Jan. 1, 1902, and found his department demoralized and a mere part of the patronage machine of political leaders, while the methods of disposing of the city's refuse were costly and unscientific. Dr. Woodbury at once started to alter these conditions, and although his efforts were accompanied by severe criticism and abuse, he continued his reform measures. The material which had previously strewn the beaches of the city after being dumped at sea was taken to a utilization plant at Barren Island and burned; many waste acres of land were reclaimed by filling in with ashes; several plants for burning refuse were established, and from them energy was developed for lighting the Williamsburg Bridge approaches. At the close of Mayor Low's administration, Tammany Hall leaders opened fire on Dr. Woodbury. He was, however, retained during the first administration of Mayor McClellan, but during the second an investigation of the Street Cleaning Department resulted in his administration being condemned. Mr. McClellan refused to remove him, but in October, 1906, he resigned as the result of a disagreement with the mayor over political appointments.

WOOL. See STOCK RAISING.

WORKINGMEN'S INSURANCE. See SOCIAL INSURANCE, and UNEMPLOYMENT, paragraph on *Unemployment Insurance.*

WORKMEN'S COMPENSATION. As stated in the article EMPLOYERS' LIABILITY, a new and just method of enforcing the liability of employers for accidental injuries to their employees has rapidly come into operation, under the name of workmen's compensation. This new method has gained headway solely because of its greater efficiency and especially its greater justice in accomplishing the demands of enlightened public opinion. Preceding 1914 20 States and the United States had enacted laws instituting the compensation principle in place of the old method of employers' liability and suits at law. In 1914, Kentucky, Louisiana, Maryland, and New York enacted new laws. In addition, Indiana, Pennsylvania, and Vermont had commissions at work on the subject.

NEW YORK. The most complete law was that enacted in New York State in December, 1913, and reënacted and approved on March 16, 1914. This law created a Workmen's Compensation Commission of five members, with salaries of $7000 each, except the chairman, who received $10,000. In its administrative features, the law became effective March 16, but as to compensation not until July 1. Four methods whereby an employer might meet his new responsibility were provided. He might insure himself in a casualty company, in a mutual company of employers, or in a special State fund; or he might furnish proof of his individual ability to meet contingencies. As a basis for the State fund, employers were divided into 42 groups with insurance rates fixed by the Commission. Any employer failing to comply with the law would thereby lose his benefit of the common law defenses in any employers' liability suit.

A liberal scale of compensations was provided. Thus, for total disability, compensation was made equal to two-thirds of the average weekly wage, whereas in all other States, except Massachusetts in 1914, such compensation equaled only one-half of the weekly wage. The law specified in great detail the compensation to be given for many different accidents, and for various degrees of relationship. A notable provision was the requirement that all compensations, regardless of the method of injury, should be paid through the State Commission.

KENTUCKY AND LOUISIANA. These two States enacted elective laws, but sought to induce employers to come under the compensation principle by abrogating their common law defenses if they failed to do so. The Louisiana law required that notice of acceptance of the law be given at least 30 days before an accident; and the law was made practically compulsory for the first 30 days after entrance upon new employment. In Kentucky the State insurance principle was adopted by the creation of a State fund to which employers subject to the act must contribute, unless of sufficient standing to meet all claims individually. All claims for compensation were to be paid from this fund, and employers were relieved of personal responsibility. Louisiana, on the other hand, merely imposed on the employer the duty of paying compensation, leaving it to his voluntary initiative to provide the means. The laws of both States were made to apply to a long list of hazardous trades. In Kentucky employers with less than six employees were excepted. In Louisiana, the law is made compulsory upon State and minor civil divisions and employers. The ratio of compensation for total disability was made equal to 50 per cent of weekly wages in both States. Moreover, in Kentucky, no time limit was set in case of permanent disability. The Kentucky law also provided additional benefits as a penalty upon employers violating the labor laws of the State. In Kentucky controversies will be disposed of by a Workmen's Compensation Board; except that on certain points appeal may be made to the Circuit Court. In Louisiana claims are settled by the judge directly.

MARYLAND. The Maryland law was effective as to administrative features April 16, and as to compensation November 1. As in New York, the law is compulsory, and common law defenses are removed in case of failure to comply. The law is also copied after the New York law in those sections setting forth the four methods of providing compensation. Insurance, however, even by the State fund does not, as in New York, remove personal liability. The law covers a very complete list of hazardous occupations; moreover, by voluntary agreements other employments may be brought under the act. Compensations in average amounts are specified for numerous particular interests, total disability being recompensed by 50 per cent of weekly wages. The State Commission created to administer the law may settle claims directly; or they may be settled summarily by a judge; and questions of fact may be determined by trial by jury. The law also contains provisions regarding medical care, burial expenses, dependents, lump sum payments, notice of accidents or injury, nullification of agreement to waive indemnity and other similar provisions designed to insure justice in administration.

CALIFORNIA. The law of 1912 required the reporting of industrial accidents. In the calendar year 1913 there were reported 24,177 industrial accidents, of which 12,106 resulted in disability of more than one week, or death. There were 864 cases of permanent disability and 583 deaths. The estimated wage loss of the 12,106 disabilities totaled $18,255,000. Altogether 10,721 of these disabilities received some compensation, the total being $613,832. The average wage loss in cases of temporary disability was $66.98; in cases of permanent disability $6392; and in cases of death, $25,370.

An elective compensation law creating an Industrial Accident Board was passed in 1911. In November, 1911, the constitution was amended so as to permit a compulsory law. This was followed by the Workmen's Compensation Insurance and Safety Act of 1913. The above board was continued as the Industrial Accident Commission, which organized January 1, with Professor Ira B. Cross of Stanford University as secretary. It at once undertook an extensive campaign of education in accident prevention. The act made compensation compulsory on all employers except those in farming, dairying, fruit growing, poultry and stock raising, and domestic service. These may, however, elect to come under the law; and many hundreds did so. The California law incorporated a unique plan of fixing the compensation for permanent disability. The percentage which actual disability in any case bears to total disability is first determined. Then compensation is provided at the rate of 65 per cent of the weekly wage during a series of weeks proportioned to the above percentage, length of time ranging from 40 weeks for 10 per cent, to 240 weeks for 70 per cent or more. Moreover, where actual disability is 70 per cent or more of total disability, a life pension equal to 10 per cent up to 40 per cent of wages is authorized. The Commission made an extensive study of accidents covering 1400 different occupations. On the basis of this information, statistics furnished by the Workmen's Compensation Service Bureau of New York, and the charges of private casualty companies of California, insurance rates for the State Compensation Insurance Fund created by the law were drawn up. The employer is given the option of insuring in a private stock company, a mutual company, or the State Fund, or of carrying his own insurance. The State Fund proved eminently successful. The safety bureau of the Commission is authorized to issue safety orders and enforce them.

OTHER LEGISLATION. Existing compensation laws were slightly modified in other States. Massachusetts increased the benefits from 50 per cent to 66⅔ per cent of wages, in case of total disability. Death benefits and compensation for partial incapacity must be paid for 500 instead of 300 weeks, the total not to exceed $4000. The maximum compensation for total incapacity was increased from $3000 to $4000. The State Industrial Accident Board may require full information from all insurance companies operating under the act; it may open branches in four cities; and it may appoint a medical advisor; it must make an annual report to the Legislature. The employees of the Boston Transit Commission were brought within the compensation law. Towns and cities were required to submit to popular vote whether civil employees should be brought within the compensation law.

In Nebraska the compensation act of 1913 was sustained by popular referendum. In New Jersey very minor changes in the law were made. New York appropriated $350,000 for its Workmen's Compensation Commission. In Ohio slight modification was made in the law.

FEDERAL EXPERIENCE. The Bureau of Labor Statistics published an account of "Compensation for Accidents to Employees of the United States" under date of Sept. 17, 1914. This was an account of the first five completed years of the operation of the Federal compensation law enacted May 30, 1908, and effective Oct. 1, 1908. This law applied to manufacturing establishments, arsenals, navy yards, river, harbor, and fortification construction, the reclamation construction work, all employment under the Isthmian Canal Commission, and hazardous work under the Bureau of Mines, the Forestry Service, and the Light House Service. The law provided compensation for injuries causing disability for more than 15 days, or death, provided not due to the negligence or misconduct of the injured employee. Compensation for disability was equal to the pay received previous to injury, but continued for not more than one year. In case of death, compensation equaled one year's wages payable at the same interval as wages, provided the survivors of the killed workman included a widow or children under 16, or dependent parents. The report showed that the number of accidents reported in all departments during the first year (11 months) was 4887; second year, 6989; third year, 9381; fourth year, 10,157; and fifth year, 10,876; or a total of 42,290. There were 1006 fatal accidents reported, of which 90 per cent were covered by the law. The number of claims made rose from 1818 for the first year to 3526 for the fifth year, making a total of 14,936. Of these, 14,046 were allowed, and total compensation was paid amounting to $1,803,900. Nearly one-half of the accidents and the compensation were due to Panama Canal construction. The average payment for each fatal case was $704 for the first year, and $661 for the fifth year. Disability compensations ranged from $121 for the first year to $107 for the fifth. Since the law took no cognizance of disability continued for more than one year, no information was secured regarding such cases.

Proposed Federal Law. On April 21, there was reported favorably by the Judiciary Committee of the House a bill to provide compensation for industrial accidents, and occupational diseases of employees of the United States. This law provided that no compensation should be paid where accident or occupational disease was due to the employee's intent to bring about injury or death of himself or another, or due to intoxication of the injured employee. In case of total disability the law provided for compensation equal to two-thirds of the monthly pay during such disability. In case of partial disability compensation was made equal to two-thirds of the difference between previous monthly pay and subsequent wage-earning capacity. Partially disabled employees were required to work, if possible, in order to be entitled to compensation. In case of suspension of work on account of any occupational disease the employee was entitled to a monthly compensation, for total or partial disability as the case might be. Monthly compensation, however, for total disability could not exceed $66.67, nor be less than $33.33. The monthly compensation for partial disability might not exceed $66.67. The United States was pledged by the law to furnish reasonable medical, surgical, and hospital service, and supplies to injured employees or those suffering from occupational diseases.

In case death resulted from an injury or from an occupational disease within six years after injury or the beginning of disability from such disease, the law provided monthly compensations equal to the following percentages of the deceased employee's monthly pay: to a widow with no child or to a widower with no child, but wholly dependent upon the deceased, 35 per cent until death or marriage; to a widow or widower with children, 10 per cent in addition to the foregoing for each child under 18, not to exceed 66⅔ per cent; to children under 18 left orphan, 25 per cent for one child, and 10 per cent additional for each additional child not to exceed a total of 66⅔ per cent, to be shared equally; to wholly dependent parents, compensation of 25 per cent for one or 20 per cent each for both. The bill also specified in detail compensation for collateral relatives. In computing compensations, no monthly pay could be considered above $100 nor below $50. Burial expenses not to exceed $100 were allowable at the discretion of the Commission. Moreover, small compensations of $5 per month could be commuted by a lump sum payment. Injured employees were required to give notice of injury within 48 hours; and all claims must be filed within 60 days after injury. Several sections of the bill required medical examination of those seeking employment, and provided for medical examination as to injury and occupational diseases. Section 31 of the bill created a Commission of three, to be appointed by the president at salaries of $5000 per year, and to be known as the United States Employees' Compensation Commission.

Safety First. The great wave of workmen's compensation legislation stimulated a movement among both employers and employees to introduce safety devices into mills and factories, and by every possible means to prevent the occurrence of preventable accidents. It was estimated by experts that about one-third of preventable accidents could be eliminated by the mechanical guarding of machinery. A portion of the remaining two-thirds were believed an irreducible minimum but a large proportion were believed capable of elimination by safety organization. Illustrative of methods are those practiced by the United States Steel Corporation, and similar concerns. In 10 years that corporation reduced the number of accidents about one-half. The Illinois Steel Company provided a safety inspector in each plant; organized committees of three workmen in each of the various divisions of each plant, each workman serving thereon in rotation; printed safety rules in several languages; erected illuminated safety signs at gateways, along roadways, and elsewhere; posted safety bulletins at every entrance; and distributed safety tokens to workers in departments having best records. In five plants the number of accidents was reduced by two-thirds in 10 years. Other concerns showed a reduction of from 50 to 65 per cent in the number of accidents. In Wisconsin excellent results followed the coöperation of manufacturers with the Industrial Commission. Similar coöperation has followed in California, Ohio, New York, and Pennsylvania.

The **National Council for Industrial Safety** held its third annual meeting at Chicago about November 1. It was composed of manufacturers, railroad officers, and business managers employing nearly 1,000,000 workers. Nearly every large railroad and industrial establishment in the country was represented, and smaller organizations have joined the Council by the hundred. The Secretary, W. H. Cameron, declared that the industrial accidents of six years ago, which amounted to 25,000 deaths and 2,000,000 injuries, had been reduced one-half, largely as the result of the activities of the Council. Ida M. Tarbell and others emphasized the very great importance of publicity in the "Safety First" campaign. Great interest was manifested in the subject of disease prevention, which was a new topic for the Council. Dr. K. W. Schereschewsky presented a paper on the physical examination of 3100 men and women workers in the clothing industry in New

York. Dr. George M. Price, Director of the Joint Board of Sanitary Control in the cloak, suit, and skirt industry of New York, described the health measures taken in that industry, and pointed out that the day of self-regulation in industry had passed. Dr. Theodore B. Sachs described the efforts of the Chicago Tuberculosis Institute to induce employers to introduce systematic physical examination of workers and applicants for work. Considerable discussion was devoted to consideration of hospitals for disabled workmen; the pension system for the incurable; the care of worn-out workers; and the need of social insurance for sickness, old age, and invalidity. This latter was determined upon as the subject for 1915.

WORKMEN'S INSURANCE. See OLD-AGE PENSIONS; PENSIONS FOR MOTHERS; and WORKMEN'S COMPENSATION.

WORLD PEACE FOUNDATION. See INTERNATIONAL ARBITRATION AND PEACE.

WRESTLING. The winners of the United States National Championships held under the auspices of the Amateur Athletic Union were: 108-pound, Richard Goudie, Lima, Ohio, Y. M. C. A.; 115-pound, John Varres, Hull House; 125-pound, S. Vorres, Hull House; 135-pound, H. H. Jenkins, Pittsburgh A. A.; 145-pound, H. H. Jenkins; 158-pound, Ben Reuben, Hebrew Institute; 175-pound, E. C. Caddock, Hebrew Institute; heavyweight, Arnold Minkley, Banker's.

Cornell for the second successive year won the intercollegiate title with Pennsylvania second, and Lehigh third. The winners of the main bouts were: 115-pound, Culberson, Cornell; 125-pound, Boak, Cornell; 145-pound, Allen, Cornell; 175-pound, Pendleton, Columbia; heavyweight, Dorizas, Pennsylvania. The University of Indiana won the Western Intercollegiate championship.

In professional circles Stanislaus Zybszko again reigned supreme, his principal victories being over Americus, Dr. B. F. Roller, and Raymond Cazeaux.

WRIGHT, MARIE (ROBINSON). An American author, died Feb. 1, 1914. She was born in Newnan, Ga., and was educated privately. After the death of her husband, Hinton P. Wright, she traveled and engaged in literary work. In 1889 she was commissioner from Georgia to the Paris Exposition. She made a special study of Spanish America, and took many long journeys in Mexico, Bolivia, and other Latin American countries, in 1904 making a record trip over the Andes. She was special delegate of the Geographical Society of Brazil in the Centennial Celebration of Mexico in 1910. Among her writings are: *Picturesque Mexico* (1897); *The New Brazil* (1901; revised edition, 1907); *The Republic of Chile* (1904); *Bolivia* (1907); *The Old and New Peru* (1909). She was a member of several American and foreign geographic societies.

WYOMING. POPULATION. The estimated population on July 1, 1914, was 168,736. The population in 1910, was 145,965.

AGRICULTURE. The area, production, and value of the principal crops in 1913–14 are shown in the following table. The figures are from the United States Department of Agriculture, and those of 1914 are estimates only.

		Acreage	*Prod. bu.*	*Value*
Corn	1914	21,000	525,000	$368,000
	1913	17,000	498,000	394,000
Wheat	1914	100,000	2,290,000	2,088,000
	1913	90,000	2,250,000	1,620,000
Oats	1914	225,000	7,875,000	3,780,000
	1913	220,000	8,360,000	3,344,000
Barley	1914	16,000	528,000	338,000
	1913	18,000	396,000	242,000
Potatoes	1914	15,000	1,620,000	1,134,000
	1913	12,000	1,680,000	1,092,000
Hay	1914	500,000	*a* 1,150,000	8,625,000
	1913	480,000	912,000	6,110,000

a Tons.

MINERAL PRODUCTION. The output of the mines of the State in 1913, was estimated as follows: gold, $26,100; silver, 1040 ounces; copper, 437,000 pounds; compared with $22,235 for gold, 265 ounces of silver, and 25,080 pounds of copper in 1912. The estimates of the United States Geological Survey for 1914 indicate a small decrease in the metal production over the production of 1913. The production of coal in 1913 was 7,393,066 short tons, with a value of $11,510,045, showing an increase of 24,942 short tons in quantity, but a decrease of $138,043 in value. The troubles between operators and the miners' union in Colorado benefited Wyoming by an influx of labor from the Colorado fields, and increased the demand for domestic coal from Kansas, Nebraska, and northern Colorado. The production of coal in 1914 is estimated to have decreased about 7 per cent. The number of men employed in the coal mines of the State in 1913 was 8331. The total value of the mineral products of the State increased from $13,374,088 in 1912, to $13,682,091 in 1913.

TRANSPORTATION. The railway mileage in the State on Jan. 1, 1913, was about 2000.

The principal material development in Wyoming in 1914 was the completing of the Chicago, Burlington, and Quincy Railroad through central Wyoming, thus putting the State upon the through line of that railroad from Puget Sound to Galveston.

FINANCE. The report of the State Treasurer for the biennial period 1912–14 shows a cash balance on Oct. 1, 1912, of $630,235. The receipts for the period amounted to $2,636,068, and the disbursements to $2,322,814, leaving the cash on hand on Sept. 30, 1914, $718,426. The bonded debt of the State on Sept. 30, 1914, amounted to $111,000, of which $90,000 was public building bonds.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions under the control of the State Board of Charities and Reform, include the State Hospital for the Insane, at Evanston; Wyoming State Penitentiary, at Rawlins; Wyoming Soldiers' and Sailor's Home, at Buffalo; Big Horn Hot Springs Reserve, at Thermopolis; Wyoming General Hospital, at Rock Springs; Wyoming General Hospital, at Sheridan; Wyoming General Hospital, at Casper; and Wyoming School for Defectives, at Lander.

EDUCATION. The total number of school children between the ages of 6 and 21 at the end of the school year 1913–14 was 35,550, of whom 32,677 were native born. The total enrollment of white pupils was 27,412, and of colored pupils 124. There were, in the State, 684 graded, and 32 high schools, and during the year 71 schoolhouses were built. The estimated value of school buildings was $1,512,510. There were employed in the schools 1366 teachers, of whom

1195 were females, and 171 were males, the average monthly salary of male teachers being $81.11, and of female teachers $57.86. The total disbursements for the support of schools amounted to $1,358,234, of which $638,828 was paid to teachers.

Politics and Government. There was no meeting of the State Legislature in 1914, as the sessions are biennial and the last was held in 1913. Elections were held in 1914 for Governor and for representative-at-large. The Democrats nominated John B. Kendrick for Governor, and in the election of November 3 he was elected, receiving 22,387 votes, compared with 19,174 for Ridgeley, Republican, 1816 for Paulson, Socialist. Mr. Kendrick received the support of the Progressive party in the State. The total vote cast was 43,377, compared with 42,296 in 1912. It is not possible to compare the figures as the Prohibition and Democratic parties combined in the election of 1914. The Republicans elected a representative-at-large, and a majority in both houses of the Legislature.

Present State Government. Governor, Jos. M. Carey; Secretary of State, F. L. Houx; Treasurer, J. L. Baird; Auditor and Commissioner of Insurance, R. B. Forsyth; Adjutant-General, V. K. Hart; Attorney-General, Douglas A. Preston; Superintendent of Public Instruction, Rose Baird Maley—Houx, Baird, and Preston, Democrats; Carey, Progressive; rest Republicans.

Judiciary. Supreme Court: Chief Justice, R. H. Scott; Associate Justices, Cyrus Beard, Chas. N. Potter; Clerk, W. H. Kelly—all Republicans.

State Legislature, 1913.

	Senate	*House*	*Joint Ballot*
Republicans	15	31	46
Democrats	12	26	38
Republican majority	3	5	8

The representatives in Congress will be found in the article United States, section *Congress.*

WYOMING, University of. A State institution for higher education founded at Laramie, Wyoming, in 1886. The total enrollment in all departments of the university for the academic year 1914–15, up to Dec. 8, 1914, was 508. The faculty numbered 66, and there were no noteworthy changes in the faculty during the year. A $1000 history scholarship in memory of Dr. Agnes M. Wergeland was the only notable benefaction. The new Agricultural Hall, costing, with equipment, over $110,000, was finished and occupied at the beginning of the fall semester. The productive funds of the university amount to about $60,000, and the income in 1913–14 to $192,534.08. The library contains approximately 35,000 volumes. The president is Clyde Augustus Duniway, Ph.D., LL.D.

X-RAYS. See Chemistry; and Physics.

YACHTING AND MOTOR-BOATING. The yachting world suffered a severe disappointment in 1914 through the calling off of the races for the America's Cup, as the result of the European War. Three defenders had been constructed in the United States, and preliminary races between them had been held when the blow fell. Sir Thomas Lipton's challenger, the *Shamrock IV*, in the meantime had crossed the Atlantic, having made the trip from England by way of Bermuda in 21 days, 23 hours.

The acceptance by the New York Yacht Club of the Lipton challenge was hailed with delight by yachtsmen, and was followed by the quick building of three sloops for the defense of the cup. These boats were the *Resolute*, designed and constructed by the Herreshoffs for a syndicate of officers and former officers of the New York Yacht Club; the *Vanitie*, designed by William Gardner, and built by Lawley and Son for Alexander Smith Cochran; and the *Defiance*, designed by George Owen, and built by the Bath (Me.) Iron Works for a syndicate of Philadelphia, Boston, and New York yachtsmen.

In the test races the *Resolute* made by far the best showing, but no decision as to which craft should have the honor of meeting the *Shamrock* had been reached when the race was cancelled. The *Resolute* won 13 of the preliminary clashes, and the *Vanitie* 6. The *Defiance* started in 11 races. She was third in 8, second in 1, disabled in 1, and failed to finish in 1. The *Shamrock* was housed in South Brooklyn, while the *Resolute* and *Vanitie* were hauled out at City Island.

The cruise of the New York Yacht Club was fairly successful, despite its curtailment because of the war. Twenty-eight yachts took part in the first squadron run from Glen Cove to Smithtown Bay, 30 in the second run to New London, and 28 in the third run from New London to Newport. The races for the cups offered by Commodore Pratt and Vice-Commodore Baker were not held on account of the war. The King's Cup Contest also was abandoned.

Motor-Boating. The motor-boat season proved interesting to followers of the sport, although the war put an end to the preparations for the international race for the Harmsworth Trophy. *Baby Speed Demon II*, owned by Mrs. Paula H. Blackton, the only woman member of the Motor Boat Club of America, was the most notable performer of the year. This high speed boat won the Blackton Cup at the club meet in Buffalo, traveling at the rate of 47.50 miles per hour for the 35-mile course. The same craft also captured the Conners Cup and the Gold Challenge Cup at the Lake George regatta. *Baby Reliance V*, owned by J. Stuart Blackton, won the Chamber of Commerce Cup, her speed being 38.03 miles per hour.

YALE UNIVERSITY. The total enrollment in all departments of the university in 1914, was 3289, divided as follows: Graduate School, 371; College, 1437; Sheffield Scientific School, 1056; School of the Fine Arts, 38; School of Music, 82; School of Forestry, 37; School of Religion, 112; School of Medicine, 50; School of Law, 142. The faculty numbers about 460. There were two additions made during the year: Wesley Newcomb Hohfeld, formerly professor of law at Leland Stanford Jr. University, was appointed professor of law; and Arthur Kenyon Rogers, formerly professor of philosophy at the University of Missouri, was appointed professor of philosophy. The productive funds of the university amounted, at the end of the year 1914, to $15,379,363. The income in the same year amounted to $809,071. The library contains about 1,000,000 volumes. (For a summary of the gifts received during the year see Gifts and Bequests, and for further notes in regard to the university in general see Universities and Colleges.) The president is Arthur T. Hadley.

YELLOW FEVER. See Tropical Diseases; Vital Statistics.

Y. M. C. A. See Young Men's Christian Associations.

YOUNG, James Scott. An American jurist, died Feb. 25, 1914. He was born in Pittsburgh in 1848 and graduated from Washington and Jefferson College in 1869. The next three years he read law in Pittsburgh and in 1872 was admitted to the bar. He practiced in Pittsburgh until 1902, when he was appointed United States Attorney for the western district of Philadelphia, serving until 1905. In that year he became judge of the Court of Common Pleas of Allegany Co., and after serving on this bench for three years he was appointed United States district judge for western Pennsylvania, in which capacity he served until his death.

YOUNG, Superintendent Ella Flagg. See Feminism.

YOUNG MEN'S CHRISTIAN ASSOCIATIONS, International Committee of. The International Committee in 1914 consisted of 72 regular members, 19 advisory members, and a Board of Trustees of 14 members. It is the direct agent of the associations of North America, and is elected by delegates from these associations meeting in triennial convention. Its work is carried on in North America, Latin America, Asia, Africa, the Levant, and the eastern part of Europe. In the home field, the committee maintains a force of 109 executive, traveling, and office secretaries, and in the promotion of association work in foreign lands, it maintains a staff of 173 secretaries. There were, in 1914, 2621 associations in North America, classified as follows: City and Canal Zone, 671; County and Town, 773; Railroad, 250; Student, 668; Colored, 145; Indian, 78; A. & N., 36. These associations had an aggregate membership of 625,698, and the net value of their property was over $88,000,000. Libraries are maintained by 497 associations, and 788 occupy buildings of their own. There are 84,577 students in educational classes, 138,500 students in Bible classes, and 331,500 young men in the gymnasia. The Publication Department of the Committee is carried on under the name "Association Press," which issued in 1914 38 new publications. The Press also issues *Association Men*, a monthly magazine, and several other periodicals. The Committee expended for its home work in 1914, $385,050, and in its foreign work $437,278. The chairman of the Committee in 1914 was Alfred E. Marling; general secretary, Richard C. Morse; general secretary for foreign work, Dr. John R. Mott; executive secretary, Frederic B. Shipp.

YOUNG WOMEN'S CHRISTIAN ASSOCIATIONS, National Board of. The object of this board is to unite in one body the Young Women's Christian Associations of the United States; to establish and develop such associations; to advance the physical, social, intellectual, moral, and spiritual interests of young women; and to participate in the work of the World's Y. W. C. A. The total number of city and town associations under the supervision of the board in 1914 was 239, with 258,644 members, and 1604 employed officers. The associations having educational work numbered 201, those having organized religious departments, 185, those with physical departments 191, and those having employment work 124. The total number of buildings owned in 1914 was 215, the value of real estate was $14,416,070. The total budget for the year was $4,623,432. As a result of the campaigns carried on in 1914, building campaign pledges to the value of $4,145,000 were obtained. In addition to city and town associations, there were, in 1914, 11 county associations with 3805 members, and 702 student associations, with 62,533 members. Miss Grace H. Dodge, president of the board, died in 1914. The secretary is Mrs. William Rossiter, and the treasurer, Mrs. Samuel J. Broadwell. The general secretary is Miss Mabel Cratty.

YSER, Battle of. See War of the Nations.

YUAN SHI-KAI. See China, *History*.

YUKON. A territory of the Dominion of Canada. Area, 207,076 square miles; population (1911), 8512. Capital, Dawson, with (1911) 3013 inhabitants. The territory is administered by a commissioner, George Black in 1914. See Canada.

YUKONITE. See Mineralogy.

ZABERN INCIDENT. See Germany, *History*.

ZANZIBAR. An island (640 square miles—the largest coraline island on the African coast) which, with Pemba (380 square miles) and several other small islands, constitutes a British protectorate. Population, 197,199 (Europeans about 250), including about 10,000 Arabs, and about 20,000 Indians. The port of Zanzibar is a centre of trade with India, Arabia, and the mainland. It has an excellent water supply, the works being completed July, 1913. Tropical products are exported. Total imports and exports 1912, £1,030,996 and £1,036,127 respectively. Revenue 1912, £242,483; expenditure £334,679; debt, £68,861. The protectorate was transferred July 1, 1913, from the control of the Foreign Office to that of the Colonial Office. The reigning Sultan is Seyyid Khalifa bin Harub. J. H. Sinclair was acting British agent and consul-general in 1914.

ZEPPELIN AIRSHIP. See Aëronautics, and War of the Nations.

ZINC. The production of primary spelter from domestic ores in 1913 was 337,252 short tons, valued at $37,772,224, compared with 323,907 tons, valued at $44,688,166 in 1912. The total production of spelter from both domestic and foreign ores in 1913 was the greatest in the history of the zinc smelting industry, being 346,676 short tons, as against 338,806 tons in 1912. Along with this increase in production there was a large decrease in the apparent consumption, which was 45,002 tons less than that of 1912.

Missouri leads all other States in production of crude zinc ore, the production in 1913 being 8,049,300 short tons. Wisconsin was second, with 1,406,000 tons; Kansas third, with 590,300; Oklahoma fourth, with 581,100; New Jersey fifth, with 490,434. For further details in regard to production of individual States, see the mineral articles in these States. See Metallurgy.

ZOÖLOGY. As has been stated in earlier Year Books, research in zoölogy is at the present time being conducted along a number of highly specialized lines, much of this work being too technical to allow of general summary, and some (as, for example, heredity) is developing new points of view so rapidly that final conclusions are not yet reached, so that whatever reports are made must be regarded as having only a tentative value. Other lines of experimental zoölogy are attracting much attention, and the newer science of oecology, has, in the United States, received some impetus from workers at the University of Chicago. The European War cut off a large number of periodicals, and undoubtedly many researches were for that reason not brought to the attention of zoölogists. In the following paragraphs important announcements of advances in general zoölogy will be taken up first, and followed by some more general reports.

PROTOZOA. Woodruff and Baitsell decided that protozoa may be kept for an indefinite period without conjugation if a proper environment is furnished. (See below.) Lund, working on *Bursaria*, and Metalnikov, on *Paramœcium*, decided that the animals are able to discriminate between nutritious, on the one hand, and nonnutritious or toxic, materials on the other. *Bursaria* will throw off vacuoles containing indigestible substances, while retaining those with digestible materials, and *Paramœcium* after having once taken toxic or nonnutritious substances, will not take in these same substances, though it will take in others. Metalnikov considers this a true process of learning.

PORIFERA. Parker found that a "finger" of a Bermuda sponge 10 c.m. long and 4 c.m. in diameter, would discharge about 78 liters of water in a day. He did not attempt to determine the character of the organisms brought into the animal by this current. The highest pressure obtained in any current flowing through the oscula of these sponges was 2.5 m.m.

ANNELIDS. Baylis described a new genus and species of Oligochæta (*Aspidodrilus kelsalli*) living on the surface of an undescribed earthworm. He concluded that it was probably commensal rather than parasitic, since its alimentary canal contained vegetable débris. Korscheldt reported on the length of life of earthworms. The longest life recorded among his specimens was a *Helodrilus longus* which lived for over 10 years. *Lumbricus terrestris* lived six years, and *Eisenia fœtida* about four and one-half years. It should be noted that these are observations on animals in confinement, and their life is possibly longer than in their natural environment, where enemies abound. Korscheldt observed that, on the approach of cold weather, these earthworms burrow to below frost level, and roll up in a ball at the bottom of their tube, passing into a regular hibernating condition.

MOLLUSCA. Kuhn, working on the biology of the snail, *Helix pomatia*, found that the animal may enter into the hibernating condition at any time of the year; in the winter as a reaction to temperature (though here also a seasonal rhythm can be shown), at other seasons as a protection against drying. The animal draws into the shell and secretes an operculum over the opening, but the chalk deposit in this operculum appears only at the approach of winter. If the operculum is in good condition, the animals will resist very unfavorable conditions, and those who die do so because of some defect in the operculum. Experiments showed that respiration takes place through both the operculum and the shell. A decrease in the water content of the liver and muscles, and a deposit of lecithin in the liver, and of glucose in the liver, foot muscle, and albumen gland, marks the progress of the hibernation. Moisture is of the utmost importance to the animal, for it moves only in a moist atmosphere and reacts to food only if the latter be damp. According to Flossner, the difference between a simple diaphragm and the heavy operculum of the winter hibernation of the snail is merely that the latter has more calcium carbonate. Thus operculum formation is largely a matter of crystallization of calcium carbonate.

Orton had earlier found that the food of Crepidula is similar to that of the oyster, and the question arose as to the function of the radula. He later found that the fine particles of the food are drawn in by the gill currents, combined with mucus and passed forward to the head. The radula bites off bits of this mass, and passes them into the mouth. Further study led him to the conclusion that the gills of lamellibranchs have essentially this same function to collect and combine food with mucus, and that they are only partly for respiration, this latter function being restricted to what he called the branchial extensions of the gills.

Among the collections of the Michael Sars Expedition were a number of cephalopods, on which reports were made during 1914. Of interest was the collection of several early stages of Spirula, taken in the plankton near the Canary Islands. The youngest stages were 6 to 9 m.m. long, and a number of older specimens were found. A new cephalopod, *Cirrothauma murrayi*, was remarkable for the gelatinous semitransparent character of the body.

ARTHROPODA. D. C. Worcester described a flying crustacean 15 to 25 c.m. long, which occurs off the coast of Palawan in the Philippine Islands. The animal can rise above the surface of the water and fly in the same manner as the flying fish.

The largest lobster on record was sent to the American Museum of Natural History in September of 1913. It was 38 inches long, and weighed 21 pounds.

While the beaver parasite *Platypsylla castoris* is the classic example of a parasitic beetle, Kellogg described other cases where this habit seems to be forming. *Leptunus testaceus* occurs in both Europe and America in nests of field mice and shrews, and shows beginnings of characteristic changes due to a parasitic life. *Lyrosoma opacum* is found on isolated rocks in the North Pacific, and is apparently carried from rock to rock by birds. This seemed to Kellogg to be but a step from true parasitism, as the change from feeding on feathers in the nest to feeding on the bodies of the living birds would be very easy to take.

McIndoo studied the olfactory reactions of the honey bees and concluded that the olfactory organs are pores found on the bases of the wings and on the legs, the antennæ having no function in this connection. In the bee, he found a scent producing organ situated between the fifth and sixth abdominal somites. This secretes a volatile substance which is held in and evaporates very slowly when the abdomen is straight, but evaporates and thus diffuses rapidly through the air when it is flexed.

VERTEBRATES. While there is still disagreement as to the mechanism of the flight of fishes, Ridewood claimed to have discovered that a South American fresh water flying fish, *Gastropileous*, flaps its fins when it "flies," while the ordinary flying fish, *Exocetus*, merely glides. Mayhoff studied the mechanism of the migration of the eyes in flatfish, and decided that muscular action is not involved, but that migration is due to the coöperation of several factors, chiefly movements of the head skeleton.

Laurens stated that frog tadpoles show no response to light but that *Amblystoma* larvæ are positively phototactic even if deprived of eyes. In the latter case, he thought that nerve endings in the skin were able to receive light stimulations. Somewhat similar results were obtained by Ackert, who studied the nerve endings in the skin of the bat, and, from their distribution and the review of the literature, concluded that a blinded bat is able to discover when it is approaching an object, by the effect of the condensation of the air against the skin, thus stimulating the nerve endings. In the amphibian *Necturus*, Eyclesheimer found that the reactions to light were essentially the same if the head were cut off as in the intact animal. This is due to a "dermatopteric" sense.

Marie Phisalix concludes from a study of the poison apparatus of snakes, that these are a direct development of the use formerly made of these organs in digestion. They originally were simply paralyzing organs and facilitated swallowing by keeping the prey quiet. Their poisonous character is simply an exaggeration of their primitive function.

Sex. While the question of the meaning of sex is still entirely unsolved, zoölogists in general believe that light may be thrown on it by a study of the conjugation processes in the Protozoa. *Paramœcium* is the form most frequently studied, and here conjugation is essentially a transfer of nuclear matter from each one of a pair of individuals to the other. This was interpreted to mean that this transfer is in some fashion a process of rejuvenation, each giving to the other something which it lacks but which is essential for its continued existence. Weismann, on the other hand, argued that it is not a rejuvenation process, but a method of producing variability in the race by varying its nuclear composition. Later workers reached conflicting results (consult NEW INTERNATIONAL YEAR BOOK for 1913), a condition which Calkins decided was due to the fact that different workers used different races, his conclusion being that in *Paramœcium* there is a definite life cycle, and that death will sooner or later occur unless conjugation takes place.

Woodruff, on the other hand, has been able to keep *Paramœcium* for more than 4500 generations without any conjugation, though individuals taken from these cultures and given an opportunity to conjugate will do so, thus showing that they are not without the ability. During this time there appeared marked periodic variations in the division rate, and Woodruff and Erdmann published, at some length, the results of a study of the nuclear changes accompanying the rhythms. From October, 1913, to April, 1914, specimens were taken daily, stained, and mounted to show the nuclear conditions. In general, nuclear changes occurred which were very similar to those which accompany normal conjugation. The macronucleus breaks up and eventually disappears, as it does during conjugation, though there are some morphological differences between the two cases. The micronuclei divide as in conjugation, though possibly the last division leading to the "migratory" nucleus does not take place. After the macronucleus disappears, either the cell divides, or a reorganization takes place without this division. In either case the new nuclear equipment comes from a division of the micronuclear matter left in the cell. The authors' conclusion was that the *Paramœcium*, if not allowed to conjugate, periodically reorganizes itself by a process which is similar to conjugation, but without any transfer of nuclear matter. This they called "endomixis." This endomixis fills the same place in the life of the animal that conjugation does, and is sufficient to prevent senile degeneration. This might be called a process of parthenogenesis, but the authors thought that the nuclear conditions were different from those of true parthenogenesis.

These results were discussed by Hertwig, who compared them with results which he obtained on this same species 25 years earlier. These had been obtained only in *Paramœcium aurelia*, which has two micronuclei, and those with only one micronucleus, so far as has been discovered, do not show them. Hertwig suggested that there was possibly a fertilization of one micronucleus by another, thus a true process of *autogamy*. Hertwig's general conclusion was that these experiments do not demonstrate that protozoa are "potentially immortal," but instead indicate that the body of each, like the body of the metazoa, contains in itself a mechanism of reorganization; while a part of the body dies, a portion of it is rebuilt into a new individual.

In the rotifer *Hydatina senta*, Whitney claimed that he had been able to control sex by varying the food of the animals. A strain was used in which the percentage of males was very low, and this continued so long as the animals were fed on a flagellate, *Polytoma*. When a sudden change was made to another protozoon, *Dunaliella*, the grandchildren of those first treated showed a marked percentage of males, hence the conclusion that the food had determined the sex. Cases have been described where a change of *temperature* was followed by similar results. Whitney thought that these were really due to changes of the diet, for the rotifers were fed on mixed cultures of protozoa, and the variations in temperature by favoring one form rather than another, resulted really in a change of food. Hence it was the food rather than the temperature which was the active agent.

Geoffrey Smith, who for some years has been attempting an analysis of sex by observations on the crabs infested by *Sacculina*, where a deterioration of sex organs follows parasitism, has, in collaboration with Hamm, continued this study on *Stylops*, a parasitic insect infesting the bee. Here they found that the ovary will disappear as a result of parasitism, but no loss of external sex characters follows this degeneration. In the male, no effects were noticed.

In the NEW INTERNATIONAL YEAR BOOK for 1913, mention was made of experiments conducted by F. R. Lillie, who found in an annelid, *Nereis*, and a sea urchin, *Arbacia*, a substance secreted by the egg which first acts as an agglutinator of the spermatozoa and subsequently activates it so as to produce fertilization. Lillie, in 1914, continued his work on this substance in the egg of *Arbacia*. The mechanism by which this substance (to which he now gives the name "fertilizin") operates, can best be described by using the terminology of immunology, though Lillie insisted that this terminology is employed only for convenience, and the analogy must not be pushed too far. Bearing this caution in mind, we may then regard fertilizin as a receptor, with a spermophile and an ovophile combining group. When its spermophile group combines with the spermatozoon, the ovophile group is activated and by combining with the egg, causes fertilization. The egg is thus fundamentally self-fertilizing, a conclusion which has important bearing on the "amazing number" of agents that initiate artificial parthenogenesis. Contact of the spermatozoon with the egg is necessary in order that this process should start, and as soon as this occurs, another substance, "anti fertilizin," neutralizes the fertilizin, thus preventing the entrance of a second spermatozoon. Lillie compared this with the lysin theory of Loeb, and concluded that the evidence is in favor of the belief that the egg rather than the spermatozoon contains the fertilizing substance.

Loeb, in rejoinder to this theory of Lillie's, described results obtained from a study of a California sea urchin, *Strongylocentrotus purpuratus*. Here he found also a substance which causes clumping of the spermatozoa which he thought identical with that described by Lillie, but which was not, in his opinion, a true agglutinator, for it does not work on spermatozoa deprived of their motility, while true agglutination would occur irrespective of any activity of the spermatozoa. He regarded the clumping as possibly a trophic reaction. Loeb also pointed out that if this is essential for fertilization, it ought to appear whenever true fertilization occurs. As a matter of fact, it appears only when eggs and sperm of the same species are mixed, and does not appear in cases of hybridization, even though there may be perfect fertilization.

MUTATION. Jeffrey corroborated Davis (consult NEW INTERNATIONAL YEAR BOOK for 1912) in claiming that the so called mutations of *Œnothera* are hybrids breaking up into their component species. De Vries replied to this by saying that the mutation theory is not dependent on *Œnothera* alone, but is based on results of other experiments. As far as *Œnothera* is concerned, he claimed that the variability is greater than could be explained on any assumption of its hybrid condition.

EVOLUTION. Decidedly revolutionary theories were proposed by Bateson in addresses prepared for delivery as President of the British Association for the Advancement of Science. Basing his belief on the results of his own experiments on plants, where he found that the appearance of a supposedly new character is always due to the removal of a previously inhibitory factor, Bateson stated his belief that what are apparently new characters in evolution, are always previously existing ones which have earlier been masked and not allowed expression. The only causes of variation are removal of an inhibitor; loss of a factor; quantitative change in a factor; and crossing. Therefore we have no reason to think of evolution as a progression from simple to complex, but the reverse. Bateson says: "I have confidence that the artistic gifts of mankind will prove to be due not to something added to the makeup of an ordinary man, but to the absence of factors which, in the normal person, inhibit the development of these gifts." So far as is known to the reviewer, criticism of Bateson's position has been universally adverse.

HEREDITY. The late Professor Whitman of the University of Chicago, left, at his death, a large collection of pigeons on which experiments on heredity had been conducted for some years. These birds have been taken to the Station for Experimental Evolution at Cold Spring Harbor, where Professor Whitman's work is being continued by Dr. Riddle, under the auspices of the Carnegie Institution of Washington. In Germany, the first establishment of its kind in the country, an Institut für Vererbungsforschung was announced for the summer session of the Royal Agricultural High School in Berlin.

At the Maine Agricultural Experiment Station, Pearl and his colleagues continued work on genetics chiefly on problems connected with the domestic fowl. Much of Pearl's publications dealt with very technical phases of genetics, but in the annual report of the Station for 1914, he summarizes in simple form the most important of these results for the use of poultry breeders.

Morgan and his students continued investigations on the fruit fly (consult NEW INTERNATIONAL YEAR BOOK for 1913), with the results that further factors, especially of the "sex linked" kind, were isolated. Morgan also finds in the fruit fly a number of "lethal factors" which act so as to produce the death of the individual possessing them.

Morgan summarized the most important recent work on heredity, together with his conclusions on the question of chromosomes and sex determination, in a book, *Heredity and Sex*, which appeared at the end of 1913.

Since Morgan's flies had all been etherized, the suspicion might arise that the mutations reported in his experiments were in direct response to the ether stimulus and therefore not normal mutants. Experiments devised to test the probability of this kind of stimulus resulting in mutation, gave no reason to suppose that it had taken place.

Castle's earlier work had seemed to show that in breeding rabbits, the ear length of the offspring was a blend of that of the parents, thus seeming to be in opposition to strict Mendelian laws. East explained this result by the assumption of "multiple factors" for ear length, the latter varying with the number of factors that are present. MacDougall claimed that if multiple factors are present, back crossing ought to give greater variations than appeared before. The results of his experiments on rabbits seemed to show a greater variability under these conditions, and thus to confirm his theory.

According to the "pure line" hypothesis of Johanssen, selection can act only so as to isolate races already in existence, and can never produce anything new. East and Hays in tobacco, and Ewing in the inheritance of antennal length of plant lice, found confirmations of this view, while Castle, on the other hand, reported evidence that selection did result in a definite increase or decrease beyond anything previously present. Apparently the pure line question is as yet unsettled.

A commonly accepted belief among animal breeders, though largely abandoned by horse, cattle, and swine breeders, is the idea that if a female is first mated with a low bred male, her later offspring will be affected by the union, even though pure blood males may be employed for the later union. This is known as "telegony," and is not generally accepted by students of heredity, experiments made some years ago on breeding horses and zebras resulting in negative evidence. The subject was discussed again by Rabaud, who went over all the available evidence, and concluded that there is nothing to be said in its favor. There might possibly be some interchange of material between the blood of the fœtus and that of the mother, so that after one impregation she would be different from what she was before, but this would be too indefinite to be of any importance in a discussion of heredity.

Newman studied the mode of inheritance in various teleost hybrids, and concluded that while the spermatozoon initiates the development, it takes no active part in the formation of the embryo until, at least, the beginning of gastrulation. At this time it begins to play a part in the formation of the embryo, and if it fails to coöperate with the egg components, the embryo does not develop normally. He was unable to get any decisive results bearing on the question of Mendelian inheritance in these hybrids.

Jordan discussed the available data on left-handedness in man, and concluded that this acts as a Mendelian recessive, though occasionally modifications of this rule appear.

CHROMOSOMES. The possible rôle of the chromosomes as carriers of hereditary qualities, continued as a subject for discussion during the year, and probably the majority of workers took the position both that the chromosomes are carriers of hereditary qualities, and that the accessory chromosome in some way determines sex. Muller, for example, thought that the discovery of a new, bent-winged, mutant in the fruit fly gave him data for a final analysis of the function of the separate chromosomes in this animal. There are first a pair of sex chromosomes, X and Y, and with the former are linked over 30 genes, the Y apparently having no function. Two pairs of "autosomes" (chromosomes other than sex chromosomes) are correlated with two other groups of genes with about 20 in each group, and a pair of smaller autosomes whose function has been in doubt, but Muller thinks they are associated with the newly discovered wing mutation. Since the chromosomes of this third group are small, the genes are closer together and of smaller size, and thus they do not mutate so often as in the larger chromosomes.

Wodsadelek reported the discovery of an accessory chromosome in the horse, though he had no information as to its relation to sex determination. Jordan reported that this accessory occurs in some mammals and not in others, and that no definite relation exists between the classification of these forms, and the presence or absence of the chromosome. The theory that this determines sex can hold in mammals only if we assume that the accessory occurs in the female in some species and the male in others. A study of the ovogenesis would be necessary in order to determine this point. Guyer thought that an X or accessory chromosome is found in the male of the Black Langshan breed of fowl, thus making the fowl heterozygous for sex. The results of breeding of this fowl, however, indicate that the female is thus heterozygous, and Pearl and Boring reinvestigated the spermatogenesis of the animal with the result that they were unable to find any indication of the accessory chromosome, though there were many chromosomes which might be thus *interpreted*. Their decision was, therefore, that Guyer's interpretation was incorrect. Metz showed that the comparative chromosomal condition in several species of the fruit fly might indicate a definite progress, but he was unable to correlate this with any constant gradation of structures among bodily characters. Doncas reviewed the relation of chromosomes to inheritance of Mendelian characters, and concluded that the arguments connecting chromosomes with Mendelian segregation are strong, but not indisputable. The arguments connecting chromosomes with sex are stronger. He considered that sex is not determined by the presence or absence of a sex factor, but by a type of metabolism induced by the presence or absence of certain chromosomes.

On the other hand, Foot and Strobell, reporting on the heredity of the intromittent organ in insects, decide that something outside the chromosome is responsible for the transmission of the characters in the observed fashion.

Boveri suggested that malignant tumors are due to the aberrant action of the chromosomes in the cells, experiments on echinoderm eggs indicating that abnormal chromosomes are followed by abnormalities in the body.

PROTECTIVE COLORATION. J. C. F. Fryer studied the polmorphism of *Papilio polytes* by pedigree breeding, and while he came to no very clean cut conclusions, he was inclined to the belief that the mimicry displayed by the female is of very little use to the animal in its native habitat of Ceylon. Abbott studied the question of mimicry in the genus *Limenitis* by statistical methods. *Limenitis archippus* is a mimic of *Anosia plexippus*, and Poulton supposed that when *Limenitis arthemis* occurred in the same locality with *Anosia plexippus*, there would be variants of the former in the direction of resemblance to the latter, and thus toward the formation of the *Limenitis archippus*. A statistical study of a number of the color markings of the insect gave no evidence that any such change as was postulated was taking place.

GERM CYCLE. Weismann's theory of heredity was largely based on the idea that a germ plasm is continuous from one generation to the next, and that this material in the egg is more or less isolated from body-forming material, and follows a definite path to the sex organs of the new individual. The subject has again been studied by Hegner, who gave a general review of the literature on Crustacea and Insects where this "Keimbahn" has been studied. In the egg of the insect *Copidosoma*, the entire chromosome content of an oöcyte nucleus forms the "Keimbahn" determinant, while another oöcyte fuses with this and forms the nucleus of the developing egg. Thus every fully formed egg of *Copidosoma* consists of two oöcytes which have fused. Hegner has summarized the work that has been done on this and allied subjects in a book *The Germ Cell Cycle in Animals.*

MARINE BIOLOGICAL LABORATORY. Of especial interest to the development of the biological sciences in the United States, was the formal opening, on July 10, of the new building of the Marine Biological Laboratory at Woods Hole, Mass. This was the gift of Mr. Charles R. Crane of Chicago, President of the Board of Trustees of the Laboratory, and makes it possible for research to be continued throughout the year. The older buildings will be kept for use during the summer. See CARNEGIE INSTITUTION; ENTOMOLOGY; FISH AND FISHERIES; ORNITHOLOGY.

ZULULAND. Administratively a part of Natal (q.v.).

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